

**PUBLIC SAFETY TELECOMMUNICATIONS  
SUSTAINABILITY ANALYSIS & FEASIBILITY STUDY  
FOR  
TOWN OF MILFORD, NEW HAMPSHIRE**

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# TABLE OF CONTENTS



## **TABLE OF CONTENTS**

### **REPORT**

Introduction.....	1
Purpose, Scope, and Methodology .....	3
Community Profiles: Background and Local Information.....	8
Town of Milford .....	8
Town of Wilton .....	9
Town of Mont Vernon.....	9
Town of Lyndeborough .....	10
Milford Area Communications Center (MACC Base).....	11
Existing Communications System and Infrastructure .....	19
MACC Base Communications Center – MACC Dispatch Site #1.....	19
Federal Hill Fire Tower – MACC Fire Dispatch Site #2.....	22
Mont Vernon Fire Department – MACC Communication Site #3 .....	25
Wilton Fire Department – MACC Communication Site #4 .....	26
Pead Hill – MACC Communication Site #5 .....	27
Abbot Hill – MACC Communication Site #6 .....	29
Milford Fire Department – 39 School Street.....	30
Milford Police Department – 19 Garden Street .....	31
Milford Ambulance Building – 66 Elm Street .....	32
Lyndeborough Police Station – 9 Citizens Hall Road .....	33
Computer Aided Dispatch (CAD).....	34
Copper Circuits and Radio Links for MACC Base Connectivity .....	34
Stakeholder Perceptions/Concerns Regarding MACC Base .....	35
Common Procedures/Guidelines .....	40
Proposed MACC Base Communication Site Improvements .....	40

Milford Police Departement Dispatch Facility.....	45
Milford Communications Site #1 – Milford Police Department.....	46
Milford Communications Site #2 – Birch Hill in Hollis, NH.....	48
Milford Communications Site #3 – Dram Cup Water Tank.....	49
Milford Communications Site #4 – Summer Street .....	49
Milford Communications Site #5 – Milford Water Department .....	50
Milford Dispatch Center Configuration, Incident Analysis, and Staffing .....	52
Incident Activity Analysis .....	53
Staffing .....	54
RDC Supervisor .....	55
Full-Time Dispatchers .....	55
Part-Time Dispatchers .....	55
Training.....	59
Feasibility of Continued Regional Operations .....	62
Abbott Hill .....	63
Pead Hill .....	63
Mont Vernon.....	63
Regional Service Governance .....	64
Financial Apportionment.....	66
Operations.....	68
Summary of Recommendations .....	69
Team Profiles.....	75
Conclusion .....	77

# REPORT



Municipal  
Resources, Inc.

## **I. INTRODUCTION**

Municipal Resources, Inc. (MRI) was engaged by the Town of Milford, New Hampshire to:

- Evaluate and assess the opportunities and challenges associated with the existing Milford Area Communication Center (MACC Base)
- Explore the possibility of the town transitioning to its own dispatch center
- Review the feasibility of the town becoming a regional dispatch center, providing dispatching services for other communities in the region, including the towns of Wilton, Mont Vernon, and Lyndeborough, thereby establishing joint regional call and emergency communications center operations for police, fire, and emergency services.

Milford will use this information to assist them in determining the operational feasibility and fiscal costs related to each of the several options they will have available for handling their public safety dispatching and communications needs, including the possibility of establishing the Milford Regional Dispatch Center (RDC) in the Milford Police Station.

MRI is a firm dedicated to providing professional, technical, and management support services to municipalities and schools throughout New England and the Northeast. We are an established New Hampshire corporation and provide local government management consulting, recruitment, and selection services to municipal governments, fire departments, police departments, public works departments, libraries, schools, and other government agencies. Among the areas of expertise available are department assessments, organizational studies, personnel recruitment, personnel administration, collective bargaining, community and economic development, budget/finance, and general management. MRI has a particularly strong public safety group with nationally recognized expertise in police, fire, and emergency services.

We are a New Hampshire corporation operating from a primary office in Meredith, New Hampshire, with a field office in Northampton, Massachusetts. We are registered to do business in Maine, New Hampshire, Vermont, Massachusetts, Connecticut, Rhode Island, New Jersey, New York, and Pennsylvania. However, our market focus and expertise are New England-based. We are intimately familiar with New England local government forms, culture, and issues, and we pride ourselves on our ability to place our recommendations for change in a context appropriate to New England local government.

Our philosophy is to help our clients solve problems and provide realistic solutions for future success. We do not put forth idealistic, unachievable, or narrowly-focused solutions.

Our objectives are always these:

- To help agencies obtain maximum value for their limited tax dollars
- To identify and help communities manage the risks associated with public safety functions
- To raise public awareness of the value and professionalism of their public resources
- To help local leaders develop and execute plans that best meet the unique needs of their communities, given the resources available.

## **II. PURPOSE, SCOPE, AND METHODOLOGY**

Public safety communications are at the heart of the effective and efficient provision of community-wide emergency services. Dispatchers must have the ability to receive critical information, process the information quickly and properly, disseminate the information to appropriate first responders, and maintain all data records required for the specific nature of the incident. These critical tasks can be much more daunting when resources are scarce, and equipment is outdated or obsolete. Current technologies and effective leadership are critical in achieving communications interoperability, defined as, *“the ability to exchange voice and data on demand, in real time, when needed and as authorized, for responders both within their agency and across jurisdictional boundaries.”* Achieving true interoperability requires an infrastructure that facilitates sharing of information. The goal is to make strategic emergency management and tactical incident management possible. Achieving this goal can present significant challenges, considering that there is tremendous diversity among 9-1-1 centers. As technology becomes more sophisticated and the public’s expectations regarding emergency services grow, the world in which public safety communications operate changed, significantly increasing the demands on the system.

Since the terror attacks on September 11, 2001, the challenges of communications interoperability have been at the top of local, state, and federal government priorities, as made apparent by the United States Department of Homeland Security’s drive towards interoperability over the past decade. To that end, there has been a move in many areas of the country to encourage regionalization of emergency communications and dispatch operations to not only facilitate interoperability, but to reduce the number of Public Safety Answering Points (PSAPs). The goal of communication regionalization is to develop a high-standards communication center, maximizing the quality of the service provided while creating a cost savings to the towns that participate, based on their current communications strategy and needs.

Although MACC Base has been providing dispatching and communications services to the communities since 1985, it is facing a number of challenges that may impact its long-term viability. As a result, Milford and the other participating communities are interested in evaluating the various options that may be available to them moving forward, including making additional investments in MACC Base.

This study is designed to determine whether the current communication systems are effective in accomplishing certain goals or if they should be modified to better achieve those goals. It takes into account the financial ability and fiscal commitment of the existing and potential partners to undertake this endeavor, as well as suggesting appropriate modifications to the communications delivery systems to provide interoperability, optimum response time, and service to the participating communities. This report contains recommendations that will assist the various communities in setting a clear course of action for future improvements by emphasizing the communities' present capabilities and needs, as well as how these can provide the foundation for a strong partnership in the future between the communities and their individual emergency services organizations.

To that end, this study included the following aspects:

1. A comprehensive evaluation of the current facilities and technology in the existing MACC Base dispatch center and an assessment of the center's ability to continue to host such a consolidated emergency communications operation, including, but not limited to, the following aspects:
  - Overall review and evaluation of existing MACC Base operations
  - An evaluation of the current dispatch space
  - Identification and analysis of the current known deficiencies and potential future challenges that confront MACC Base
  - An evaluation of current and proposed upgraded dispatch equipment at MACC Base
  - Evaluation of the potential to further expand MACC Base operations
2. Evaluate for the Town of Milford the feasibility of operating its own dispatch center for Police, Fire, Ambulance, and Department of Public Works (DPW)



3. Analyze and make recommendations relative to the Town of Milford becoming a regional dispatch center (RDC) for up to four towns including Milford, Wilton, Mont Vernon and Lyndeborough.
4. Identify methods for providing connectivity and redundancy in order to deliver 911 calls from each of the three communities to the proposed host community of Milford, with appropriate levels of backup to provide for continuity of operations.
5. Perform an interoperability assessment and develop cost estimates to connect all involved jurisdictions to the proposed host community.

To accomplish this task, members of the study team gathered the following information and documentation: community demographic data; existing rules, regulations, and standard operating procedures/guidelines for MACC Base; maps and square mileage calculations; budgets for MACC Base and the Town of Milford; service trends and call volume data from MACC Base; appropriate collective bargaining agreements; mutual aid agreements; a list of communication lawsuits; personnel rosters; department organization charts; and annual reports. MRI consultants met with various direct and indirect stakeholders from each community and the director of MACC Base. Personnel also made site visits to each of the existing communication system sites to evaluate the existing infrastructure.

Twenty specific tasks were incorporated into the completion of this project. These are outlined below:

1. We met with various stakeholders, including local officials; MACC Base personnel; Police, Fire, and Ambulance leadership; and DPW department heads to understand their needs and expectations. This included certain stakeholders from Wilton, Mont Vernon, and Lyndeborough.
2. We conducted on-site assessment of the MACC Base dispatch facilities and capabilities. This included an evaluation of existing communications infrastructure sites, development of an equipment inventory, and an assessment of operations currently utilized in order to determine the feasibility of various options for dispatch operations.
3. We conducted a thorough evaluation of existing MACC Base technology relative to ongoing issues and needs identified by member municipality departments.
4. We assessed the operational level of service currently provided to member communities by MACC Base.

5. We reviewed current MACC Base administrative operations including, but not limited to, Inter-Municipal Agreements (IMA), operating expenses, and staffing.
6. We evaluated proposed upgrades to MACC Base to ensure that identified and potential issues will be addressed and that the upgrades present a comprehensive state of the art solution to meet members' future needs.
7. We evaluated the feasibility of creating a dispatch center at the Milford Police Station.
8. We evaluated other potential locations that might be considered for a dispatch center.
9. We evaluated the location of existing antenna sites and any additional locations that may be needed for Milford-only coverage.
10. We evaluated the location of existing antenna sites and any additional locations that might be needed for regional coverage.
11. We conducted a thorough assessment and provided recommendations as to the type, amount, and cost of additional or consolidated voice and data systems, radio systems, telephone systems, and other related equipment that should be purchased in order to provide a new dispatch center with the most up-to-date technology and equipment available.
12. We performed an interoperability assessment and developed cost estimates to connect all the jurisdictions to the host community.
13. We evaluated the current methodologies employed in each community pertaining to the process of fire alarm signals and identified the most advantageous way to consolidate the reception of these signals.
14. We conducted a thorough assessment of the staffing requirements for a proposed RDC and developed recommendations regarding related costs, including budget development, cost allocation, and operational issues.
15. We conducted a thorough assessment and provided recommendations concerning other transitional issues, in terms of operations and human resources.

16. We conducted an assessment of, and developed recommendations for, a training program for public safety dispatchers, including initial and continuing training.
17. We developed cost projections for facilities, technology, and training to make the Milford RDC operable as the host public safety dispatch facility. This included providing several cost allocation models that have been successfully implemented in comparable RDCs.
18. We consulted with several reputable vendors to develop cost estimates for various components needed for the RDC.
19. We consulted with representatives of the towns and selected vendors to assess and analyze various options for connecting Wilton, Mont Vernon, and Lyndeborough to a Milford RDC.
20. We provided recommendations to ensure that all that we proposed complied with federal and state regulatory and statutory requirements that might have an impact on the creation or operation of an RDC.

After a preliminary analysis of the data, a series of searches were completed for existing standards and industry “best practices” to be used for comparison to both the MACC Base and the proposed regional dispatch center. Several studies exist for extrapolating center configurations, budget recommendations, and staffing/call volume standards. These studies were then used as the foundation to begin the development of various recommendations, including projections for relevant costs and savings to the participating communities.

Recommendations for the advancement of this proposed endeavor are made in a series of important categories. These recommendations are not intended to be exclusive if adopting this communication strategy; however, they are designed to approximate many of the foreseeable hurdles that may be encountered during a transition from one type of communications center to another. They also offer a different model for a regional approach to communications.

### **III. COMMUNITY PROFILES: BACKGROUND AND LOCAL INFORMATION**

#### **TOWN OF MILFORD**

The Town of Milford is located on the Souhegan River in Hillsborough County in southern New Hampshire. It is the retail and manufacturing center of a six-town area known informally as the Souhegan Valley. According to the United States Census Bureau, the town's population was 15,115 at the 2010 census. This represents an 11.7% increase from the 2000 census.

The town encompasses a total area of 25.3 square miles, of which 25.2 square miles is land and 0.1 square mile is water. Milford is bordered by Lyndeborough and Mont Vernon to the north, Amherst to the east, Hollis to the southeast, Brookline to the south, Mason to the southwest, and Wilton to the west.

The Milford Police Department is staffed by 34 full-time personnel. The department consist of one (1) chief, two (2) captains, five (5) sergeants, sixteen (16) patrol officers, one (1) juvenile officer, one (1) school resource officer, two (2) detectives, one (1) prosecutor, four (4) administrative staff, and two (2) traffic aides. The department operates 24 hours a day and has four (4) shifts which are each comprised of one (1) sergeant and three (3) patrol officers.

Milford Fire Rescue provides both fire and limited non-transport first response emergency medical services (EMS) to the town. The department is a combination fire department consisting of both full- time career staff and on-call personnel. The department is currently staffed by a full-time Fire Chief and four (4) full-time firefighter/EMTs and approximately 40 on-call firefighters. The Department operates from a single central station located at 39 School Street. The department is an active participant in the Souhegan Mutual Aid Association.

Milford Ambulance provides advanced patient care and transport Emergency Medical Services (EMS) to the Town. The Department is a combination EMS agency consisting of a full-time Director, four (4) career staff and twenty-two (22) part time; seven (7) per-diem and eight (8) volunteer personnel that staff two ambulances for the community. One ambulance is staffed on a 24/7 basis while a second unit is staffed 16 hours per day during peak call volume hours. In addition to operational communications, Milford EMS also requires field to hospital communication for both medical direction and patient data transmission.

The Milford Department of Public Works (DPW) operates from a central facility located at 289 South Street. The DPW is staffed with twenty-five (25) employees and operates twenty-eight (28) vehicles. In terms of communications the DPW would require twenty-three (23) mobile radios, six (6) portable radios and one (1) base station.

The Milford Water Department provides water utilities to the town from a central facility located at 564 Nashua Street. The water utility is staffed with fourteen (14) employees and operates thirteen (13) vehicles. Although communications within the water utility have not been fully developed, the Milford Water Department anticipates needing thirteen (13) mobile radios, one (1) portable radio and one (1) base station.

## **TOWN OF WILTON**

The Town of Wilton is located in Hillsborough County. It is primarily a rural bedroom community with some limited manufacturing and service employment. According to the United State Census Bureau, the 2010 population was 3,677, a 1.8% decrease from the 2000 census count. The town center, which is located at the junction of New Hampshire Routes 31 and 101, is designated as the Wilton census-designated place (CDP) with a 2010 population of 1,163. The town has a total area of 25.8 square miles, almost 100% of which is land. The town center CDP has a total area of 1.9 square miles. Wilton is bordered by Lyndeborough to the north, Milford to the east, Mason to the south, Greenville to the southwest, and Temple to the west.

The Wilton Police Department is comprised of five (5) full-time, and four (4) part-time officers. The full-time personnel consist of one (1) chief, one (1) sergeant, and three (3) patrol officers. The town is protected by the Wilton Fire Department, which is staffed 100% by volunteer personnel.

The Town of Wilton Ambulance provides primary emergency (911) ambulance coverage for the Towns of Wilton, Lyndeborough, and Temple. The ambulance is staffed with one (1) full-time chief/paramedic, per-diem paramedics, and per diem/on-call emergency medical technicians (EMT)/Advanced EMT's.

## **TOWN OF MONT VERNON**

The Town of Mont Vernon is also in Hillsborough County. Once a resort destination, today it is primarily a bedroom community with a 2010 census population of 2,409. This represents an 18.4% increase over the 2000 census count.

According to the United States Census Bureau, the town has a total area of 16.7 square miles, of which 16.6 square miles is land and 0.1 square miles is water. The town is bisected by New Hampshire Route 13 from north to south. Mont Vernon is bordered by New Boston to the north, Lyndeborough to the west, Wilton to the southwest, Milford to the south, Amherst to the southeast, and Bedford to the east.

The Mont Vernon Fire Department is an on-call department comprised of approximately 20 members. The Mont Vernon Police Department consists of two fulltime and five (5) part-time officers. Mont Vernon utilizes MACC Base for police and fire dispatch. Emergency Medical Services (EMS) in Mont Vernon are both dispatched and provided by the Amherst Fire Department.

### **TOWN OF LYNDEBOROUGH**

The Town of Lyndeborough is also located in Hillsborough County. According to the United States Census Bureau, the town's population at the 2010 census was 1,683, an increase of 6.2% over the 2000 census count.

The town has a total area of 30.5 square miles, of which 30.4 square miles is land and 0.1 square miles is water. Lyndeborough is crossed by New Hampshire Route 31. It is bordered by Greenfield to the northwest, Francestown to the north, New Boston to the northeast, Mont Vernon to the east, Milford to the southeast, Wilton to the south, and Temple to the southwest.

Lyndeborough is protected by a police department that is comprised of one (1) full-time chief, one (1) full-time officer and five (5) part-time officers. When a Lyndeborough police officer is not available, the New Hampshire State Police respond to emergency calls within the town. The Lyndeborough Fire Department, located at 129 Forest Road, is an all-volunteer organization. Emergency Medical Services (EMS) in Lyndeborough are dispatched through Keene Mutual Aid (KMA) and provided by the Town of Wilton

#### **IV. MILFORD AREA COMMUNICATIONS CENTER (MACC BASE)**



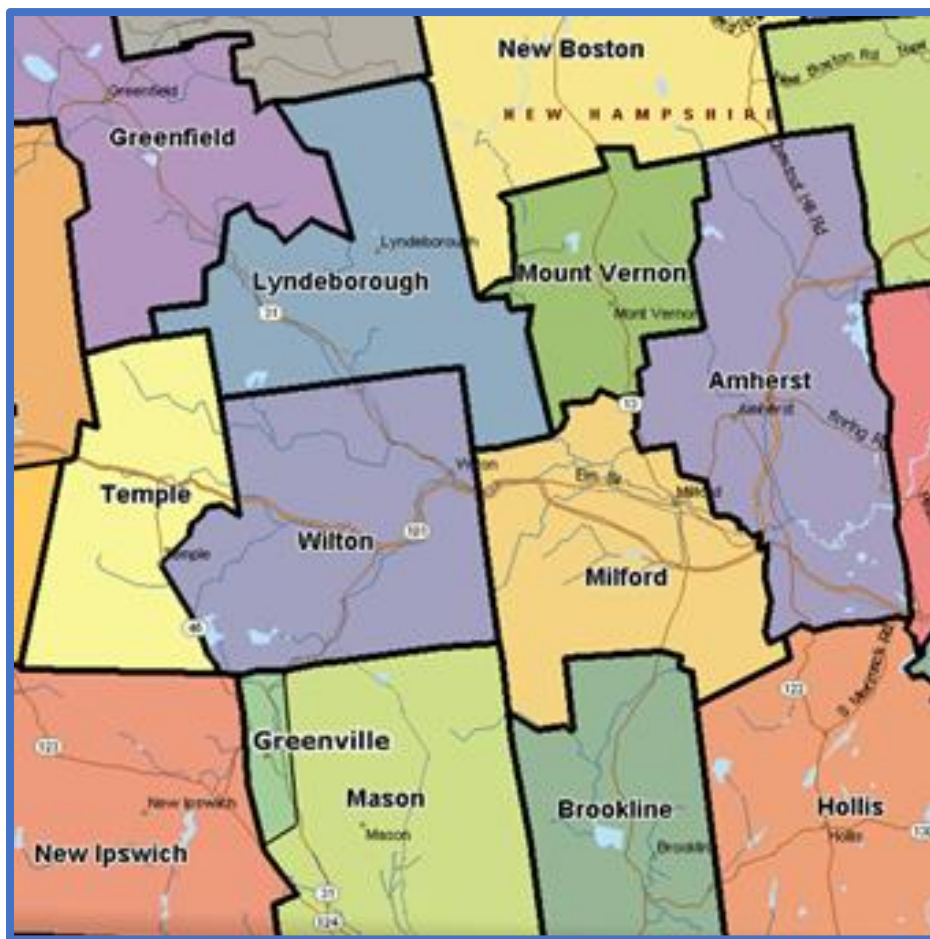
The Milford Area Communications Center known by its acronym MACC Base is a regional communications center that serves as a joint endeavor including the towns of Milford, Wilton and Mont Vernon. MACC base was formed in 1985 as a cooperative endeavor among six (6) towns in Hillsborough County. Originally, the communications operation was overseen by the Milford Police Department. However, the operation was viewed by the fire and EMS organizations as being police centric and not responsive to their needs. In addition, there were concerns that Milford was not upgrading communications equipment frequently enough to keep pace with improving technology. Over time, several of the original communities withdrew from the operation.

Today, MACC Base is a cooperatively owned and managed endeavor based upon an intermunicipal agreement among the towns of Milford, Wilton, and Mont Vernon. The Town of Amherst was once a participant but ended up withdrawing. MACC Base is overseen by a three (3) member Board of Governors (BOG) comprised of one (1) member appointed by each town's Board of Selectmen, not necessarily a member of the BOS. The BOG meets monthly. In terms of decision making, Milford has two votes (50%) on both fiscal and operational issues. Day-to-day operations are managed by a director who is hired by the BOG. The current IMA expires at the end of 2018.

MACC Base currently serves the Town of Milford's Police, Fire, and EMS departments (the town wants to expand DPW operations); the Town of Mont Vernon's Police, Fire, EMS, and DPW; and the Town of Wilton's Police, Fire, EMS, and DPW. Emergency management communications are also handled for all three communities. The center also provides service under contract to the Town of Lyndeborough for police and EMS. Lyndeborough pays a set fee for services and does not have a representative or a vote on the MACC.



## MACC BASE COMMUNICATIONS COVERAGE AREA



MACC Base also serves as the primary backup location for the dispatch centers in Hollis and Amherst, including taking their rolled over 911 calls as a secondary answering point. These two centers perform the same function for MACC Base. In the event of a catastrophic event requiring evacuation of the MACC Base dispatch center, one dispatcher relocates to the Amherst Police Department, and another deploys to the Wilton Fire Department to continue operations from those locations. The Wilton fire station has all the appropriate infrastructure to serve as a long term backup if necessary. Amherst Police Department can also serve as an extended dispatch center backup for MACC Base, should that need ever arise.

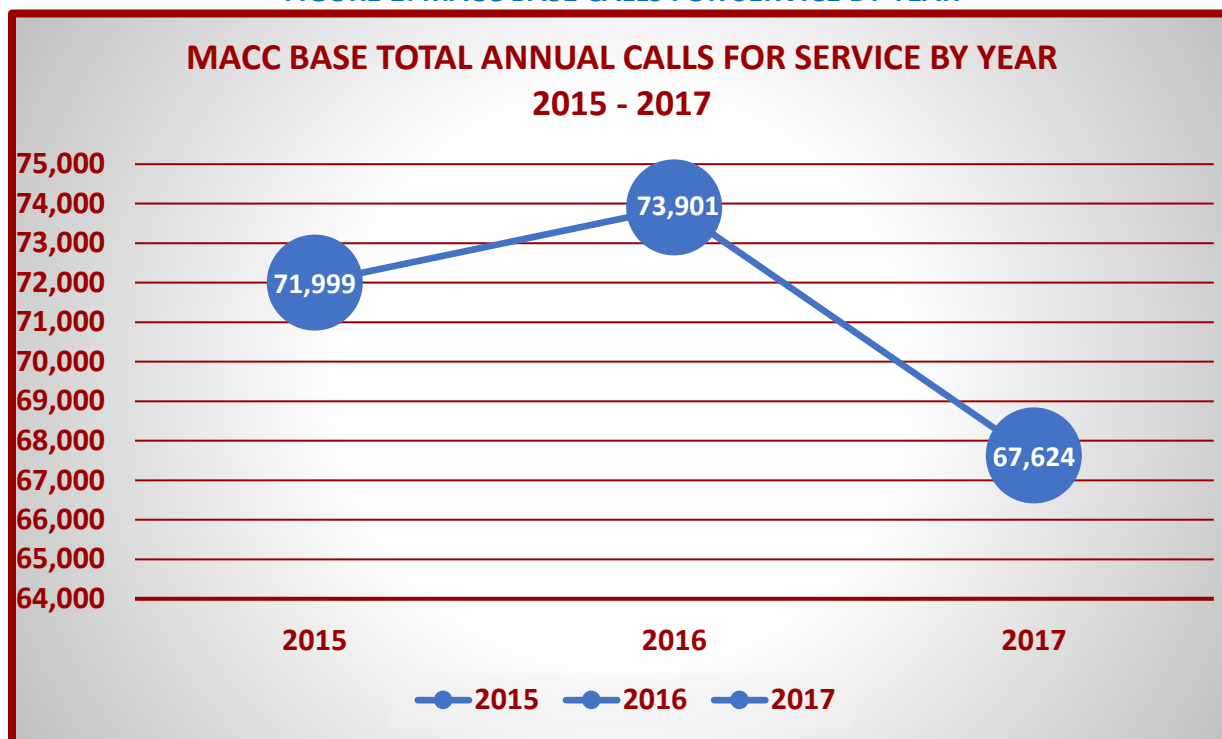
MACC Base staffing consists of six (6) full-time and 11 part-time personnel. Dispatchers work staggered ten-hour shifts from 7:00 AM to 5:00 PM, 11:00 AM to 9:00 PM, 5:00 PM to 3:00 AM, and 9:00 PM to 7:00 AM. There are two dispatchers on duty 16 hours per day from 11:00 AM to 3:00 AM. For the eight-hour time frame between 3:00 AM and 11:00 AM there is normally only a single dispatcher assigned. However, the center director, who also dispatches a minimum of 20 hours per week in addition to his administrative duties, is usually in his office early in the



morning and can assist when necessary. The dispatch center personnel are non-union and do not have a collective bargaining agreement.

From 2015 through 2017, MACC Base handled a total of 213,524 calls for service, an average of 71,175 per year.

**FIGURE 1: MACC BASE CALLS FOR SERVICE BY YEAR**



MACC Base does not log individual telephone calls for service inclusion or business calls from, or for, the agencies they serve.

Source: MACC Base Director

The table below provides a breakdown of the number of calls for service by town and department, along with corresponding percentage of actual calls for service, handled by MACC Base for 2015 through 2017. Total call volume is indicative of the actual workload that MACC Base experiences, and that they, or any other entity that may take over dispatching in the Milford area, are/will be expected to efficiently handle, on an annual basis.

**FIGURE 2: CALLS FOR SERVICE AND PERCENTAGE BY TOWN AND DEPARTMENT 2015 - 2017**

TOWN	SERVICE	2015		2016		2017	
		CALLS FOR SERVICE (CFS)	% CFS	CALLS FOR SERVICE (CFS)	% CFS	CALLS FOR SERVICE (CFS)	% CFS
MILFORD	POLICE	54,587	75.82%	51,707	69.97%	46,947	69.42%
	FIRE	1,102	1.53%	1,072	1.45%	990	1.46%
	EMS	2,097	2.91%	1,898	2.57%	2,114	3.13%
<b>TOWN TOTAL</b>		<b>57,786</b>	<b>80.26%</b>	<b>54,677</b>	<b>73.99%</b>	<b>50,051</b>	<b>74.01%</b>
WILTON	POLICE	10,051	13.96%	9,278	12.55%	7,679	11.36%
	FIRE	198	0.28%	212	0.29%	172	0.25%
	EMS	437	0.61%	456	0.62%	430	0.64%
<b>TOWN TOTAL</b>		<b>10,686</b>	<b>14.84%</b>	<b>9,946</b>	<b>13.46%</b>	<b>8,821</b>	<b>12.25%</b>
MONT VERNON	POLICE	5,706	7.93%	5,715	7.73%	5,707	8.44%
	FIRE	90	0.13%	92	0.12%	68	0.10%
<b>TOWN TOTAL</b>		<b>5,796</b>	<b>8.05%</b>	<b>5,807</b>	<b>7.86%</b>	<b>5,775</b>	<b>8.54%</b>
LYNDEBOROUGH	POLICE*	25	0.03%	5,903	7.99%	5,841	8.64%
	EMS**	86	0.12%	21	0.03%	16	0.02%
<b>TOWN TOTAL</b>		<b>111</b>	<b>0.0015%</b>	<b>5,924</b>	<b>8.02%</b>	<b>5,857</b>	<b>8.66%</b>
TEMPLE	EMS**	63	0.0009%	75	0.0010%	66	0.0098%
<b>ACTUAL TOTAL CFS FOR YEAR</b>		<b>71,999</b>		<b>73,901</b>		<b>67,624</b>	
<b>GRAND TOTAL CFS***</b>		<b>74,442</b>		<b>76,429</b>		<b>70,030</b>	

Source: MACC Base Director

Notes: All listed percentages are calculated using the Actual CFS total for year discounting multiple agency responses. Percentages have been appropriately rounded.

\* Lyndeborough Police Department dispatching by MACC began January 2016.

\*\* EMS in Lyndeborough and Temple is covered by Wilton Ambulance Service.

\*\*\* EMS in Mont Vernon is provided by the Amherst Fire Department

\*\*\*\* Grand total is greater than Actual CFS total due to multiple services/towns responding to some calls.

The four police departments that MACC Base provides services to share a common primary frequency (by choice) with secondary frequencies available as needed for tactical or alternate usage. This primary frequency has five separate transmit/receive sites at Milford Town Hall, Mont Vernon Fire Department, Pead Hill, Abbott Hill, and Wilton Fire Department.

The two ambulance services share a common EMS frequency with transmit/receive sites at Milford Town Hall, Mont Vernon Fire Department, and, Pead Hill. Wilton Ambulance also serves the towns of Lyndeborough and Temple; however, their respective fire departments are dispatched by SWNH Fire Mutual Aid in Keene on a frequency monitored by MACC with tone alert for Wilton Ambulance calls.

Milford Fire Department has its own single-site repeater frequency located on the Federal Hill Fire Tower. They have a separate fireground frequency. The fire departments in the towns of Mont Vernon and Wilton operate on a separate low band dispatch frequency with transmit/receive sites on the Federal Hill Fire Tower, Mont Vernon Fire Department, Pead Hill, and Abbott Hill. They also have separate fireground frequencies.

The public works departments in Milford, Mont Vernon, Wilton, and Lyndeborough utilize a common low band frequency with transmit/receiver sites at Milford Town Hall and Mont Vernon Fire Department. Currently, Milford DPW has a limited number of radios in their trucks and are primarily contacted via the foreman's cell phone.

Funding for MACC Base operations is allocated proportionally, based on the population of the participating municipalities. During the process of budget preparation and approval, three additional personnel are appointed to form a finance advisory board. Approval of the budget requires unanimous approval of the partner entities; however, Milford has two votes (50%) on fiscal matter.

As the table below illustrates, the MACC base budget has been decreasing slightly each year from 2016 through 2018. Over the three-year period, the budget has decreased more than 7% from 2015.

**FIGURE 3: BUDGET PER TOWN DONE BASED UPON POPULATION 2016 - 2018**

			2016	2017	2018
TOWN	POPULATION	% OF POPULATION	YEARLY COST	YEARLY COST	YEARLY COST
MILFORD	15,114	71.2938%	\$507,282.33	\$492,439.43	\$489,719.49
MONT VERNON	2,408	11.3627%	\$ 80,849.91	\$ 78,484.27	\$ 78,050.77
WILTON	3,677	17.3435%	\$123,405.55	\$119,794.75	\$119,133.08
LYNDEBOROUGH*	1,683	7.354%	\$ 22,000.00	\$ 20,933.97	\$ 20,818.34
<b>TOTAL</b>			<b>\$ 733,537.79</b>	<b>\$ 711,652.42</b>	<b>\$707,721.68</b>
<b>DIFFERENCE FROM PREVIOUS YEAR</b>			<b>-3.61%</b>	<b>-3.07%</b>	<b>- 0.55%</b>

Source: MACC Base Director

\* Lyndeborough is not a full member of MACC Base. They contract for service and pay as such. Payment as per MACC BOG is 40% less than full member.

**FIGURE 4: MACC BASE LINE ITEM BUDGET COMPARISON 2016 – 2018**

Budget Item	2016 Budget	2017 Budget	2018 Budget
<b><u>6500</u> PAYROLL</b>			
Full Time	\$ 289,009.76	\$ 297,300.85	\$ 300,685.84
Holiday	\$ 12,224.40	\$ 12,590.40	\$ 12,649.20
Part Time	\$ 86,340.00	\$ 88,990.00	\$ 94,580.00
Secretarial	\$ 903.84	\$ 931.20	\$ 959.04
Overtime	\$ 25,059.36	\$ 26,653.52	\$ 26,659.52
<b>Subtotal</b>	<b>\$ 413,537.36</b>	<b>\$ 426,465.97</b>	<b>\$ 435,533.60</b>
 <b><u>6508</u> FICA/Medicare</b>	 <b>\$ 31,635.61</b>	 <b>\$ 32,624.65</b>	 <b>\$ 33,318.32</b>
<b>Total Payroll:</b>	<b>\$ 445,172.97</b>	<b>\$ 459,090.62</b>	<b>\$ 468,851.92</b>
 <b><u>6575</u> State Retirement</b>	 <b>\$ 36,446.99</b>	 <b>\$ 37,592.05</b>	 <b>\$ 38,691.38</b>
<b><u>6400</u> Unemployment Tax</b>	<b>\$ 3,000.00</b>	<b>\$ 3,000.00</b>	<b>\$ 3,000.00</b>
 <b><u>BENEFITS:</u></b>			
<b><u>6054</u> Health</b>	<b>\$ 119,521.66</b>	<b>\$ 91,054.48</b>	<b>\$ 71,448.35</b>
<b><u>6056</u> Life</b>	<b>\$ 728.32</b>	<b>\$ 749.22</b>	<b>\$ 757.75</b>
<b><u>6053</u> Disability</b>	<b>\$ 489.05</b>	<b>\$ 457.35</b>	<b>\$ 462.55</b>
<b><u>6052</u> W/C</b>	<b>\$ 1,395.00</b>	<b>\$ 1,395.00</b>	<b>\$ 1,395.00</b>
<b><u>6061</u> Tuition</b>	<b>\$ 2,500.00</b>	<b>\$ 2,500.00</b>	<b>\$ 2,500.00</b>
<b>Total</b>	<b>\$ 124,634.03</b>	<b>\$ 96,156.05</b>	<b>\$ 76,563.65</b>
 <b><u>Operating Expenses:</u></b>			
<b><u>6055</u> Liability Insurance</b>	<b>\$ 4,800.00</b>	<b>\$ 4,800.00</b>	<b>\$ 4,800.00</b>
<b><u>6653</u> Legal</b>	<b>\$ 500.00</b>	<b>\$ 500.00</b>	<b>\$ 2,500.00</b>
<b><u>6651</u> Audit</b>	<b>\$ 800.00</b>	<b>\$ 800.00</b>	<b>\$ 800.00</b>
<b><u>6654</u> Repairs/Maintenance</b>	<b>\$ 1,500.00</b>	<b>\$ 1,500.00</b>	<b>\$ 1,500.00</b>
<b><u>6657</u> Water Cooler</b>	<b>\$ 420.00</b>	<b>\$ 420.00</b>	<b>\$ 420.00</b>
<b><u>6658</u> Cellular</b>	<b>\$ 1,600.00</b>	<b>\$ 1,600.00</b>	<b>\$ 1,600.00</b>
<b><u>6659</u> Medical / Physicals</b>	<b>\$ 500.00</b>	<b>\$ 500.00</b>	<b>\$ 500.00</b>
<b><u>6665</u> Advertising</b>	<b>\$ 300.00</b>	<b>\$ 300.00</b>	<b>\$ 300.00</b>
<b><u>6660</u> Subscriptions / Dues</b>	<b>\$ 1,270.00</b>	<b>\$ 1,650.00</b>	<b>\$ 1,750.00</b>
<b><u>6656</u> SPOTS</b>	<b>\$ 4,500.00</b>	<b>\$ 4,500.00</b>	<b>\$ 4,500.00</b>
<b><u>6175</u> Training/Mileage</b>	<b>\$ 3,000.00</b>	<b>\$ 3,000.00</b>	<b>\$ 3,000.00</b>
<b>Total Services:</b>	<b>\$ 19,190.00</b>	<b>\$ 19,570.00</b>	<b>\$ 21,670.00</b>
 <b><u>SUPPLIES:</u></b>			
<b><u>6678</u> Generator Fuel</b>	<b>\$ 600.00</b>	<b>\$ 600.00</b>	<b>\$ 600.00</b>
<b><u>6679</u> Janitorial</b>	<b>\$ 500.00</b>	<b>\$ 500.00</b>	<b>\$ 500.00</b>
<b><u>6680</u> Office</b>	<b>\$ 1,500.00</b>	<b>\$ 1,500.00</b>	<b>\$ 1,500.00</b>
<b><u>6683</u> Postage</b>	<b>\$ 100.00</b>	<b>\$ 100.00</b>	<b>\$ 100.00</b>
<b>Total Supplies:</b>	<b>\$ 2,700.00</b>	<b>\$ 2,700.00</b>	<b>\$ 2,700.00</b>

Budget Item	2016 Budget	2017 Budget	2018 Budget
<b><u>CONTRACTS:</u></b>			
<b><u>6666</u></b> IMC CAD Software	\$ 7,305.00	\$ 8,048.75	\$ 8,433.75
<b><i>Total Contracts:</i></b>	<b>\$ 7,305.00</b>	<b>\$ 8,048.75</b>	<b>\$ 8,433.75</b>
<b><u>UTILITIES:</u></b>			
<b><u>6812</u></b> PSNH	\$ 5,502.96	\$ 5,523.48	\$ 4,776.48
<b><u>6811</u></b> High Mowing	\$ 240.00	\$ 420.00	\$ 420.00
<b><u>6820</u></b> Telephone/Internet	\$ 12,350.40	\$ 12,480.12	\$ 12,222.64
<b><i>Total Utilities:</i></b>	<b>\$ 18,273.36</b>	<b>\$ 18,423.60</b>	<b>\$ 19,419.12</b>
<b><u>6602</u></b> Repair/Emergency Rep	\$ 10,000.00	\$ 50,000.00	\$ 50,000.00
<b><u>6150</u></b> COMPUTER Repair/Ma	\$ 4,000.00	\$ 4,000.00	\$ 50,000.00
<b><u>6151</u></b> Backup/DR	\$ 4,500.00	\$ 4,500.00	\$ 4,725.00
<b><u>6652</u></b> Generator Maintenance	\$ 750.00	\$ 750.00	\$ 750.00
<b><u>6300</u></b> <b><u>NEW EQUIPMENT:</u></b>	<b>\$ 50,000.00</b>	<b>\$ 1.00</b>	<b>\$ 1.00</b>
<b><u>6625</u></b> Town Hall Rent	\$ 3,000.00	\$ 3,000.00	\$ 3,000.00
<b><u>6667</u></b> Federal Hill Site	\$ 1,000.00	\$ 1,000.00	\$ 1,000.00
<b><u>6655</u></b> Pead Hill Site	\$ 3,745.44	\$ 3,820.35	\$ 3,915.86
<b><u>Total Rental Expenses</u></b>	<b>\$ 7,745.44</b>	<b>\$ 7,820.35</b>	<b>\$ 7,915.86</b>
<b>TOTAL:</b>	<b><u>\$ 733,717.79</u></b>	<b><u>\$ 711,652.42</u></b>	<b><u>\$ 707,721.68</u></b>

Source: MACC Base Director

MACC Base is hampered by several fiscal issues. First, in accordance with State statute, there is no capital reserve fund for the upgrading or replacement of capital equipment and critical infrastructure. Any requests of this nature must be budgeted for in advance and approved unanimously by the participants. The Town of Milford is very fiscally conservative and has stopped needed capital projects in the past. A companion issue to this is that the Town of Milford has required that any surplus funds from the MACC Base Budget must be returned to member towns as a method to offset municipal budgets. Any requests to keep the funds as a surplus must be explicitly approved by all three participants.

In addition to the above fiscal concerns, because MACC Base is not an official government entity, it cannot borrow money, issue bonds, or take on debt on its own. Instead it must rely on one of its participants to do these things for it. This has understandably caused reluctance on the part of the communities to approve major capital projects for which one of them would be required to obtain the financing. There is concern that if there was a financial default, the town which provided the funding would be saddled with the debt.

## **V. EXISTING COMMUNICATIONS SYSTEM AND INFRASTRUCTURE**

### **MACC BASE COMMUNICATIONS CENTER – MACC Dispatch Site #1**

MACC Base's operation is located on the fourth floor of the Milford Town Hall at 1 Union Square. It has been located here since its inception in 1985. The building is outfitted with a complete automatic fire suppression system and equipped with a small mobile emergency generator to provide backup power to the building in the event of a short-term power outage. In the event of a long-term outage, the Town of Milford provides a larger mobile generator to power Town Hall.

The center has two fully functional Motorola 5500 dispatch consoles. It previously had three. The dispatch consoles are outfitted with the following radio capabilities:

- Kenwood TKR-750 Configured as a base station w/Crescend Amplifier - Police 1
- Kenwood TKR-750 Configured as a base station w/Crescend Amplifier - Police 2
- Kenwood TKR-750 Configured as a base station w/Crescend Amplifier - EMS
- Kenwood TKR-750 Configured as a base station w/Crescend Amplifier - Fire 2
- Kenwood TK-690H 39.50 MHz - DPW Base
- Kenwood TK-8180H 33.64 MHz - Abbott Hill Link
- Kenwood TK-8180H Police - Abbott Hill Link
- Kenwood TK-8180H EMS - Pead Hill Link
- Kenwood TK-8150 33.64 MHz - Pead Hill Link
- Kenwood TK-790H Milford Fire - Federal Hill Fire Tower Link
- Kenwood TK-862H 33.64 MHz - Federal Hill Fire Tower Link
- Motorola M1225 Police 2 Link - Pead Hill
- Kenwood TK-8180H Police 1 Link - Pead Hill
- Kenwood TK-8180H Police 1 Link - Wilton Fire Station

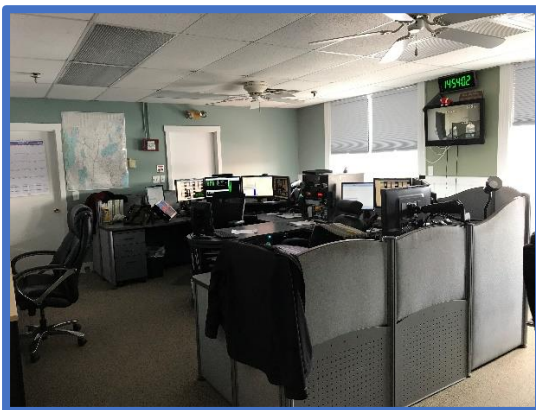
MACC Base has six (6) 911 phone lines. It also has multiple business phone lines for fire emergency and fire dispatch. It has two (2) main on-emergency business lines that also receive the forwarded phone calls from the Milford and Mont Vernon police departments. There is also a third line in this trunked system that serves as the primary incoming point for forwarded calls from the Wilton and Lyndeborough police departments. Any of these incoming forwarded calls

can cycle to any of the three lines based on available status. There are three (3) additional phone lines for member agencies and personnel to contact dispatch without tying up a business line.

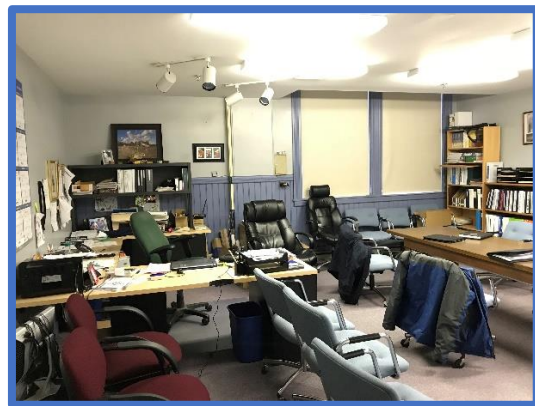
There is a hardwired, direct connect ring down phone line from the Milford Fire Department to MACC Base for business use. There is also a hardwired, direct connect ring down outside of the Milford Police Department for public use between 11PM and 7AM when the building may be locked and unstaffed, as well as one for the elevator in town hall. The ring down lines outside the Mont Vernon, Wilton, and Lyndeborough police departments and Milford EMS all forward to MACC Base in the same manner as their respective business lines.

MACC Base monitors municipal and business fire alarms for each of the communities through the Milford Fire Department Digitize system. This is a 100-mil box system with five (5) circuits and more than 80 master boxes.

The main MACC Base antenna is located on a cell tower on the roof of Milford Town Hall approximately 90' above ground level, which is an additional 80' above sea level.



**Figure 5 (left): MACC Base main dispatch area with two consoles**



**Figure 6 (right): MACC Base director's office and conference/meeting room**





**Figure 7 (left): MACC Base radio equipment and repair shop adjacent to dispatch room**



**Figure 8 (right): Portable generator unit that provides backup power to town hall and MACC Base when needed**



**Figure 9: MACC Base antenna on Milford Town Hall; owned by the town.**



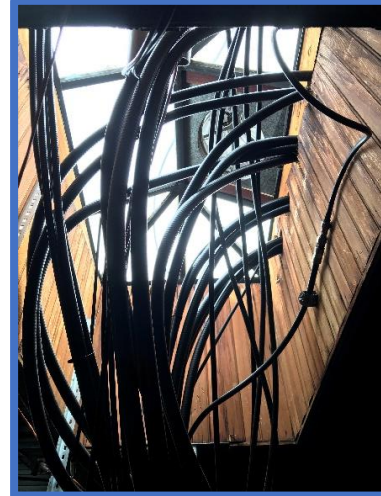
**Figure 10 (left): Pull down access stairway in hall to access communications equipment in building attic**



**Figure 11 (right): Communications equipment located in Milford Town Hall attic above MACC Base dispatch area; limited climate control.**



**Figure 12 (left): Communications equipment in attic with cables going up to access antenna**



**Figure 13 (right): Communications cables between antenna and equipment in attic**

### **FEDERAL HILL FIRE TOWER - MACC Fire Dispatching Site #2 (Milford Main Fire Site)**

MACC Base has a memorandum of understanding (MOU) with the State of New Hampshire for use of the Federal Hill Fire Tower on Ponemah Hill Road for Milford Fire dispatching operations. This is reported to be an excellent communications location; however, there have been occasional jurisdictional issues with the State.

The site is equipped with a Kenwood TK-790H, cross band, 33.64 MHz fire base radio and a Kenwood 100-watt mobile radio.

The radio equipment is stored in a wooden cabin which has no environmental controls. Backup power is supplied by batteries which, if fully charged, will supply power for 12 to 24 hours. The MRI study team noted that there is a U. S. Cellular equipment storage building on site which would make a much better location for the radios. This site is also not accessible year-round.

Milford Fire had long standing communications problems which they acted to rectify on their own. One component of their plan to correct their communications issues was to shift their main transmit and receive site to the Federal Hill tower. This strategy also included moving from low band to a narrow, high band radio frequency. These changes have resulted in a significant improvement in the reliability of Milford Fire Department communications. It should be noted that several other area fire departments remain on low band but are moving to transition communications to high band.

The fire tower has components of several different communications system attached to it, including State and municipal equipment, along with equipment owned by U.S. Cellular. The tower was never engineered for the additional weight of this equipment; however, when the

state made an attempt to repair and reinforce the tower, U.S. Cellular took legal action to stop them, as the work would have caused disruptions to their service.

Although the chances of obtaining State approval to build a new municipal communications tower and site might not be particularly high, the Town of Milford should consider contacting their local representatives to enlist their support. This should be done regardless of which communications option the town ultimately chooses. Due to its elevation, Federal Hill presents a very good location for a possible new tower for all Milford departments and/or MACC Base. The current antenna is located 78 feet above ground level. Ground level at this location is 206 feet above sea level.



**Figure 14 (left): Federal Hill Fire Tower showing antennas on top, wooden radio equipment shed on left, and U.S. Cellular equipment building on right. The radio building is not secure or climate-controlled and has limited backup power. The U.S. Cellular building is secure, climate-controlled, and equipped with backup power.**  
**Figure 15 (right): Radio equipment cabinet in storage building**



Figure 16 (left): Federal Hill Tower radios inside wooden building

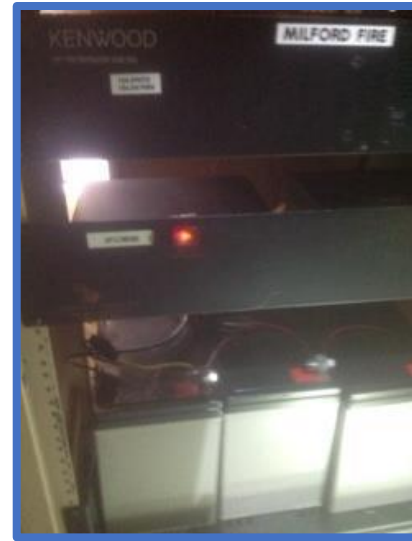


Figure 17 (right): Batteries for backup power for Milford Fire Kenwood high and low band radios.

**Recommendation V-1:**

With support and assistance from their State Representatives, and regardless of their ultimate decision on whether to remain with MACC Base, the Town of Milford should explore the possibility/feasibility of constructing a new communications tower and site at the Federal Hill location.

- Option 1:** Erect a 110' monopole communications tower. As part of this process the town should consider negotiating with U.S. Cellular for use of their existing equipment building for the placement of radios as it has environmental controls. Permission to use the building could be a tradeoff for allowing U.S. Cellular use of the monopole tower.
- Option 2:** Consider relocating all Milford Fire, Police and EMS radio equipment to this location and constructing a Milford-only public safety tower site.
- Option 3:** If it is deemed to be infeasible to construct a new tower and/or necessary approvals cannot be obtained the town and/or MACC Base should work collaboratively with the State to re-engineer and strengthen the existing tower to allow the proper attachment of necessary communications antennas for Fire, Police, EMS and U.S. Cellular. This option would also involve possible use of the U.S. Cellular building for the public safety radios.

At the time of this study, this site was totally unsecured. There have been instances when the radio equipment has been broken into and repeaters unplugged, rendering them out of service.



**Recommendation V-2:**

The Town of Milford and MACC Base should work collaboratively with the State of New Hampshire and U. S. Cellular to provide site security to the Federal Hill facility. The entire site should be fenced in and security cameras should be installed so that MACC Base personnel can monitor the site for possible vandalism in real time.

**MONT VERNON FIRE DEPARTMENT - MACC Communication Site #3**

This site, located at the Fire Station at 1 Main Street, provides transmit/receive sites for Fire, Police, EMS, and DPW. The building is secure, climate-controlled, and equipped with a natural gas-powered emergency generator. The radios are located in an open storage area on the second level of the apparatus bays. Radios at this location are as follows:

Kenwood TK-690H	33.64 MHz - Fire Base	Phone line controlled to dispatch
Kenwood TK-690H	33.68 MHz - Fire Base	Phone line controlled to dispatch
Kenwood TK-790H	Police 1 Base	Phone line controlled to dispatch
Kenwood TK-790H	EMS Base	Phone line controlled to dispatch
Kenwood TK-690H	39.50 MHz - DPW Base	Phone line controlled to dispatch

The antenna height is 60 feet above ground level. The antenna site itself is 247 feet above sea level.

Mont Vernon Police use repeaters installed in their cruisers which are also activated by their portable radios. It was reported to the MRI study team that this has greatly improved their communications.



**Figure 18 (left): Mont Vernon Fire Department antenna tower at the rear of the station**



**Figure 19 (right): Radio equipment cabinet in open storage area on second floor area above the apparatus bays**

## **WILTON FIRE DEPARTMENT - MACC Communication Site #4**

This site, located at the town's Fire Station at 102 Main Street, provides radios for communications with Fire, Police, and DPW. It is also one of the two functional backup communications center sites for MACC Base, should their main facility be unusable. The other site is Amherst Police Department. The building is secure, climate- controlled, and equipped with a natural gas-powered emergency generator. Radio equipment at this location includes:

Kenwood TK-790H	Police 1 Base
Kenwood TK-890	UHF link to dispatch (Cross-Band System)

The antennas at this location are installed on the top of utility poles, approximately 60 feet above the ground. Ground level at this location is 390 feet above sea level.



**Figures 20 (left) and 21 (right): Radio communications equipment at the Wilton Fire Department, one of MACC Base's backup communications sites if the main center is not usable.**



Figures 22 (left) and 23 (right): Communications antennas at the Wilton Fire Department

#### **PEAD HILL - MACC Communication Site # 5**

The Pead Hill site on Pead Hill Road contains radio equipment for communicating with Police, Fire, EMS, and DPW. The equipment is located in a secure building; however, the building is not equipped with any environmental/climate-control equipment. The site itself is not secure or monitored. A propane gas-powered generator provides backup emergency power.

The following radio equipment is located at the Pead Hill site:

Kenwood 100 W bases

Kenwood TKR-850	UHF Repeater
Kenwood TK-690H	33.640 MHz - Fire Base (Cross-Band System)

Kenwood TK-790H	Police 1 Base
Kenwood TK-890	UHF link to dispatch

Kenwood TK-790H	EMS Base
Kenwood TK-890	UHF link to dispatch

Kenwood TK-790H	Police 2 Base
Kenwood TK-890	UHF link to dispatch

The antennas are mounted on utility poles 70 feet above the ground. Ground level at this location is approximately 259 feet above sea level.



Figure 24 (left): Pead Hill radio equipment building, which is not well-secured or climate-controlled, along with propane powered emergency generator and propane tanks.



Figure 25 (right): Radio equipment and backup batteries in equipment storage building



Figure 26: Antennas mounted on side-by-side utility poles

**Recommendation V-3:**

**Additional site security should be considered for the Pead Hill communications site. The entire site should be fenced in and security cameras should be installed so that MACC Base personnel can monitor the site for possible vandalism in real time.**



### **ABBOT HILL - MACC Communication Site #6**

The Abbot Hill communications site is located at the High Mowing School, 222 Isaac Frye Highway in Wilton. This location contains equipment for communicating with Police, Fire, and DPW. The radio equipment is located in a small room next to the water purification system. Water was noted on the floor near the water system, but the radio room was dry. The entire building is climate controlled. Backup power is provided by means of batteries that can supply the radio system for between 12 and 24 hours. Long term backup power needs can be provided by the building's emergency generator.

The following radio equipment is at this location:

Kenwood 100-watt Base Radio

Kenwood TK-790H

Police 1

Kenwood TK-8180H

UHF link to Dispatch (Cross-Band System)

Kenwood TK-690H

33.64 MHz - Fire Base

Kenwood TK-890

UHF link to Dispatch

The antenna pole is mounted next to the radio room building with an antenna height of 75 feet above ground level. Ground level is 268 feet above sea level.



**Figure 27 (left): Radio room with battery backup at High Mowing School on Abbot Hill**



**Figure 28 (right): Abbot Hill radio antennas mounted on utility poles**

The following locations are part of the regional communications infrastructure but are not direct MACC Base communications sites. All of these agencies are currently dispatched by MACC Base.

### **MILFORD FIRE DEPARTMENT - 39 School Street**

The Milford Fire Department communications equipment is normally located in the Fire Station. However, when this study was underway, the department was undertaking a major renovation and expansion project that will convert the Fire Station into a two-story building. This has necessitated the relocation of personnel living quarters and all communications equipment, including radios, fire alarms, telephones, and computer systems, to a temporary location across the street from the Station.

The Fire Station is a secure facility with climate control. It is equipped with an emergency generator to provide backup power to the building. The following communications equipment is located in the Station:

Kenwood NX-5700 100-watt VHF radio  
Kenwood TK-860 100-watt UHF radio  
Bogen Classic C-60 Amplifier  
Astro RS 20-amp converter

Fire alarm equipment:

Digitize System 3505	Age: 20 years
Form 4 5 Circuit Fire alarm cabinet	Age: 50 years
Digitize Mark VI 1221 radio box receiver	Age: 17 years
DD19 E telephone receiver	Age: 15 years

Antenna height at this location is 82 feet. Ground level is 269 feet above sea level.



Figure 29 (left): Kenwood VHF & UHF base radios

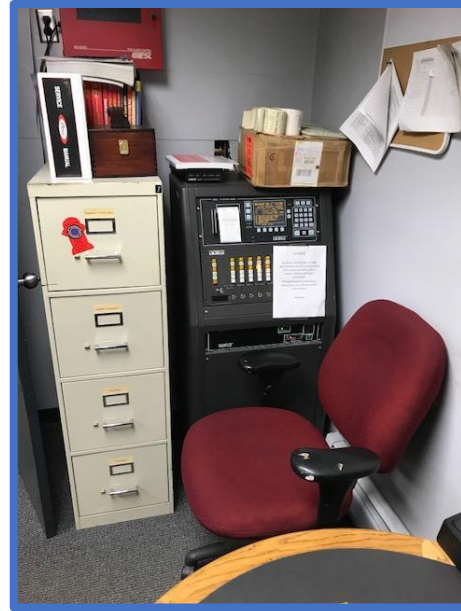


Figure 30 (right): Milford Fire Department Form 4 Fire Alarm 5-cat panel for receipt of fire alarm and master box signals



Figure 31: 82-foot high radio antenna attached to Milford Fire Station

### **MILFORD POLICE DEPARTMENT – 19 Garden Street**

The Milford Police Department is located in a new facility that is fully-secured and climate-controlled. It is equipped with an emergency generator for backup power supply. Communications equipment currently located here includes:

Motorola ASTRO tm DIV 3000  
Digital Interface unit, Centracom Signaling link,  
Base MC 1000 100-watt  
Age: 20 years

Antenna height at this location is 60 feet. Ground level is 275 feet above sea level.



**Figure 32 (left) and 33 (right): Communication antenna at the rear of Milford Police Department**

### **MILFORD AMBULANCE BUILDING - 66 Elm Street**

The Milford Ambulance Building is a secure facility that is climate-controlled and equipped with an emergency generator. Milford Ambulance communicates primarily via 155.100 MHz VHF radio, which serves as both the dispatch and communication channel. MACC Base also automatically sends informational text message to department cellular phones.

Communications equipment currently located here includes:

Base Radio: VHF Kenwood TK-180H with three desk top remotes  
Veetronix 2TR9A 2-tone alert receiver and SEI Advisor encoder

Mobiles: Kenwood TK-7180 (one deck with dual heads)  
Motorola Astro Spectra (one deck with dual heads 256 channel)

Portable radios: TK-5210

Pagers: Swiss phone (narrow-band)

The antenna is a Telewave (ANT150F6-3) 20-foot unit mounted on the building at approximately 25 feet off the ground. Ground level is 292 feet above sea level.



Figure 34 (left): Milford Ambulance base station radio



Figure 35 (right): Milford ambulance antenna attached to building

### **LYNDEBOROUGH POLICE STATION – 9 Citizens Hall Road**

The Lyndeborough Police dispatch location has capabilities to communicate with Police, EMS, and DPW. Fire is dispatched at another location. As previously noted, the town is not a full member of MACC Base; they contract for service. The current contract is for one year. The facility is secure and climate-controlled. The facility is equipped with backup power.

Communications from Lyndeborough are relayed through either the Mont Vernon Fire Station or the Pead Hill site, then transmitted on to MACC Base dispatch. The following communications equipment is located at this site:

Base Station: Motorola Astro 100 watt

Mobile units: Motorola Astor 100 watt

Portable Radios: 2 - 110 Kenwood TK5710 110 watt

7 - Kenwood TK5220 110 watt

3 - Motorola XTS 3000 (these will be used as backup)

The town has installed mobile repeater systems in all cruisers. The system is activated by pushing the cruiser siren button which connects the portable radio to the cruiser repeater. This system has reportedly greatly improved the police radio communications between the town and MACC Base.

An antenna is located on the side of the Police Station approximately 35 feet above ground. Ground level at this location is 678 feet above sea level.



The town is looking to negotiate a deal with a private entity to move the antenna to a 100-foot tower located on DPW property at 46 Locust Lane. It is projected that this move will further improve the communication link between the town and MACC Base.

### **COMPUTER AIDED DISPATCH (CAD)**

MACC Base is currently utilizing a multi-agency configuration of the Tri-Tech IMC Computer Aided Dispatch (CAD) system for both dispatching and its Police records management system (RMS). This system has been in use and hosted/located at MACC base since 2000.

MACC Base dispatch records are continuous from IMC's inception at the center. Milford Police moved 13 years of legacy records into the new system during the transition to the current database from the prior spoke and hub system. Wilton Police records are available through cross-agency integration. Mont Vernon Police and Lyndeborough Police legacy records are maintained in house at each of their respective departments. MACC Base's current cross-agency interface is a statewide connection linking numerous hubs from around the State to allow rapid information sharing among law enforcement entities.

MACC Base is responsible for state police on-line telecommunications systems (SPOTS), Criminal Justice Information Services (CJIS) compliance, National Crime Information Center (NCIC)/ New Hampshire In State Warrant (NHIW) entries, criminal and motor vehicle histories, and mobile data terminal (MDT) training and certifications for Police personnel for the four departments it serves. MACC Base also logs telephone and radio traffic as a regular part of business operations and provides certified copies of recordings for prosecution.

None of the Fire Departments, or Milford Ambulance, have integrated their records management systems into the IMC system.

### **COPPER CIRCUITS AND RADIO LINKS FOR MACC BASE CONNECTIVITY**

It is common in most radio systems to use leased copper circuits to connect satellite receive sites (among other system parts) back to the system's voter/comparator, usually located in the dispatch center. Although they often result in unreliable performance due to quality control issues, service issues with the lease company, and prioritization issues with the circuits, municipalities still rely heavily on these circuits. In about 2014, lease companies, such as Verizon, started to make announcements that existing two and four wire copper lines will no longer be supported, nor will any new circuits be allocated. This includes copper T1 lines and circuits. This has been occurring since about 2015. Leased fiber optic lines are what will be supported from this point forward.

One of the primary issues that has been identified as a challenge for MACC Base is its aging infrastructure. This includes a heavy reliance on copper lines and radio links to provide connectivity between the four communities and MACC Base. Regardless of the final outcome regarding the provision of dispatch and communications services in the Milford area, all of the towns must consider migrating any existing copper circuits to an alternate solution. The

alternatives to copper lines are microwave, fiber, and RF. Unfortunately, leased fiber circuits are more expensive than copper. A basic RTNA circuit is around \$60 per month and a copper T1 is around \$350 per month; a fiber connection runs \$700 to \$800 per month). Microwave has a larger initial capital outlay, and RF is limited by distance. This situation should be taken into consideration when evaluating the health of the existing towns' radio systems and future upgrades.

Since town-owned fiber is becoming more and more popular, there is always the potential that locally-owned fiber could be used to connect the sites instead of leased fiber. The Town of Milford has already started moving in this direction. They have run 12 strands of fiber between Town Hall and the Police Department; however, they are currently utilizing only three (3) or four (4) strands. This provides for a lot of additional capacity. The town has also installed six (6) strands of cable between Town Hall and the Fire Department and are currently only utilizing two (2) of them. They are in the process of running fiber from Milford Police Station to the Ambulance Bay.

**Recommendation V-4:**

**Whenever feasible/possible, the other MACC Base member communities should consider replacing all their existing copper lines and circuits with new fiber optic lines that will continue to be supported.**

## **VI. STAKEHOLDER PERCEPTIONS/CONCERNS REGARDING MACC BASE**

All of the MACC Base stakeholders that the MRI study team interviewed during the course of this study were unanimous, and adamant, that MACC Base provides very good service to their communities. Without exception, they stated that the dispatch center personnel are very professional, dedicated, and willing to assist their personnel in any way that they can. As previously mentioned, MACC Base personnel handle all SPOTS & CJIS compliance, NCIC/NHIW entries, criminal and motor vehicle histories, and MDT training and certifications for Police personnel for the four departments it serves. All felt was a significant benefit.

The main concern expressed by these stakeholders is that in the more than 30 years that it has been operating, MACC Base has only been able to do limited infrastructure and capital improvement upgrades. The MACC Base director has been trying to address these issues for many years but has been unable to get the necessary support from the towns to appropriate the money needed to update the equipment and address the deficiencies that exist in the communication system. The deferring of these types of ongoing upgrades has been a catalyst for the current situation wherein a major financial investment is needed to upgrade equipment; yet, there is still a reluctance by some participants to move the project forward.

The MRI study team was informed that police officers have varying degrees of difficulty communicating when using their vehicle radios. Reception and transmission is even more difficult when they are utilizing portable radios. The issues vary from having loud static transmitting over the radio to not being able to hear cruisers on other side of the same town. Although having all four towns on the same radio frequency promotes more effective interoperability and is considered to be a best practice, the challenges brought about by the aging radio system has simultaneously caused problems in cases where police officers in different towns, or on different incidents, are talking at same time because they can't hear the others. They end up stepping on each other. The Town of Wilton reported that they have very poor radio coverage in some areas of the town. As a result, they are frequently stepped on, or overridden, by Milford units as they are trying to communicate with dispatch. This has even occurred when the Wilton unit has been transmitting first.

MRI was informed of a situation in which a Wilton officer was in trouble and needed assistance. The officer had to hit the emergency button on his radio three (3) times before he was able to cut into the system and reach MACC Base. While some may argue that this was an isolated incident, nevertheless it is an unacceptable situation, one that could have had tragic implications. There have been a few other instances when an officer needed assistance and had difficulty reaching MACC Base to request it. Emergency services personnel of all disciplines depend on a reliable communications system as a critical component of their overall safety system. A system that does not allow them to communicate reliably can significantly jeopardize their safety during critical incidents or events.

In order to address these issues, both Mont Vernon and Lyndeborough have installed repeater systems in their police vehicles. When activated, these repeaters allow the officer's portable radio to link up with mobile vehicle radio and use that to communicate back to MACC Base. Both Police Chiefs felt that their units had corrected the majority of the problems. The Milford Police Department has not employed this solution as each patrol unit would require a mobile repeater and these units would conflict with each other when more than one cruiser is on an incident scene. The use of multiple mobile repeaters could disable the entire communications system. The MRI study team concurs that the use of mobile repeaters is not a viable solution for the Milford Police Department.

Despite the universal compliments regarding the dispatchers and personnel operations at MACC Base, during our interviews there appeared to be far less unity regarding other issues beyond the needed infrastructure upgrades. The Wilton Police Chief indicated that he would not want to move to another dispatch center as they have a great relationship with the Milford Police Department and work well together. He also mentioned the benefits of having all four (4) towns utilizing the MACC BASE IMC CAD/RMS, which permits the easy sharing of information among these communities.



Conversely, the Mont Vernon Police Chief informed the MRI team that the town was paying \$78,050.77 per year for service from MACC Base, based upon the population formula. He believes he could obtain the same service elsewhere for about \$40,000 or 49% less per year. He indicated that he has been looking to others to do his dispatching, should the MACC Base discontinue its service. Whether the town may be actively considering withdrawing from MACC base is unknown. The Lyndeborough Police Chief informed MRI that they are a paying customer of MACC Base, not a true member. They pay 40% of the cost, based on the population formula, that the other towns pay. For 2018, this amount is \$20,818.34. He informed the study team that Hillsborough County was charging \$15,500 for the same type of service, nearly 25% less. Although these estimates for providing dispatch services by other entities are reported to be accurate, there would be other costs involved to establish and maintain connectivity. Ensuring the same level of professional service would also be a consideration.

As was previously noted, Milford Fire, on its own, undertook what they believed to be a necessary communications system upgrade, an initiative which has significantly improved communications reliability for both the low and high band fire channels. The Fire Chiefs believe at least one additional repeater is needed, possibly in the area on Milford Town Hall, to address the remaining dead spots. They also stated that eventually the Mont Vernon and Wilton Fire Departments which are still utilizing low band radios will need to upgrade to high band, which will mean an additional cost for them.

Milford EMS has some unique and technologically specific needs regarding their communications system. As such, any upgraded or new system should be designed to support both current and evolving technologies. The Milford Ambulance Director informed the MRI study team that, for the most part, their radio transmission and reception coverage in Milford is good, with very few dead-spots. Milford Ambulance shares a radio channel with Wilton EMS. He did state that radios and pagers on the west side of town receive better reception from the Wilton antenna sites than from the Milford one.

From the EMS perspective, Director Schelberg would like to see any new or upgraded system include:

- Multiple antenna sites in and around Milford to provide redundancy and improve transmission and reception. This includes improving reception to allow Milford Ambulances to transmit from Manchester Hospitals as a unit arrives and or clears the receiving medical facility.
- Addition of a second MACC Base EMS-only frequency, which would allow for dispatch on one frequency to switch to a second frequency for routine operations or large-scale operations. This is based on the increasing EMS call volume and sharing the frequency with Wilton

- Ability to transmit and receive data and video for transmission of EKGs, ultrasounds, etc. to Medical Directors or ER physicians.
- Ability to transmit and receive data for integration into ambulance patient care reports (PCR) software, iPads, or other mobile devices for site file review, directions and other functionality. This mobile data platform would include IMC Tritech Computer Aided Dispatch system integration with electronic patient care reporting.

Director Schelberg also reported that he is concerned with three operational risks. These concerns are detailed below:

1. The inherent risk of not having a two dispatcher staffing pattern at MACC Base on a 24/7 basis. This practice leaves a single dispatcher managing multiple tasks during what are typically low call volume hours.
2. The lack of having the Milford Town Frequency in/located in dispatch consoles and in police vehicles. Director Schelberg believe that expanding the use of this channel could be a viable backup system that could link all town agencies and MACC Base.
3. The lack of communication relative to continuity of operations from MACC Base. This includes information on how calls would be transferred to other dispatch centers that have access to Milford radio frequencies should MACC Base need to be compromised.

The MACC Director has realized for several years that the system is falling behind technologically and needs to be upgraded. He has had limited success convincing his board to do so and has been approved for just a fraction of what is needed. Over the past eight (8) years (since 2010) MACC Base has expended just \$132,000 in radio maintenance, repairs, and improvements, which includes \$108,000 for new dispatch consoles in 2015. It should be noted that prior to this the center had three (3) functional consoles but was reduced to two (2) during this upgrade. Beyond that, in December of 2011 the MACC BOG approved spending \$30,000 of unexpended savings to replace the recording system, and in 2013 the usage of \$41,000 in surplus funds was approved by the BOG and Budget Committee for police software upgrades. Between 2012 and 2014, MACC Base actively, but ultimately unsuccessfully, sought \$350,000 in grant funding through NH HSEM and FEMA AFG for new site builds, microwave links, and consoles, as funds for such had not been available through the existing budgets. During the course of our interviews it was apparent to the MRI study team that there was consensus on certain things regarding MACC Base, particularly with regard to the professionalism of the staff. However, there were also areas where the participants had vastly different perspectives on what the needs are, and how to accomplish and fund those needed upgrades. As the communication issues have been ongoing, the towns have been unable to

agree on an equitable way to share the cost fairly among themselves. Both Milford and Wilton would like to come up with a formula that could work for all participants and would fairly allocate costs for necessary infrastructure upgrades.

On the other hand, Mont Vernon and Lyndeborough feel that the communications problems primarily involve Milford and Wilton, and they are no longer having significant issues since they had installed the mobile repeaters in their vehicles. They also indicated that for the cost to update the system they should use a similar formula that is used for the operation, with Milford paying 71.3%, Mont Vernon paying 11.4%, Wilton paying 17.34%. In addition, Lyndeborough is paying 7.35% as a MACC Base customer.

Milford and Wilton, but in particular the former, are both very open to continuing to participate in MACC Base, provided that the necessary infrastructure and technology upgrades can be made and the funding for them is done in an equitable fashion. They would also favor a more complete, comprehensive upgrade, rather than a multi-year phased approach. Their concerns center on facing the same technology issues a decade into the future and the need to approach the voters to approve funding in multiple years rather than just once.

The issue of cost sharing, and by extension ownership of MACC Base equipment, particularly if the partnership were to dissolve, is a critical one that must be resolved. If the towns cannot come to an agreement on these issues they will never be able to approve the funding necessary to perform the needed system upgrades. This is one of the main catalysts that has driven the Town of Milford to undertake this study. It is our opinion that the cost of failing to act is significant. If upgrades are not made to the communications system, the possibility exists that a police officer, firefighter, or EMT/paramedic could not communicate with dispatch or other personnel during a critical time when they are in a very serious situation. There is also somewhat of a silo perspective among some of the MACC Base participants, who look only at their own situation and operations rather than at the larger, more regional picture.

Based on its experiences in similar situations, MRI's recommendation would be that each town own and be responsible for the upkeep and repair of its public safety radio infrastructure. Any communication site that is used by multiple towns could be equally paid for by all the municipalities that use that particular link.

**Recommendation VI-1:**

**Each municipality should be responsible for the purchase and upkeep of all radio communications equipment used by their town departments, as well as communications sites located within their borders. Each town should also be responsible for the cost of establishing and maintaining (and would also own) infrastructure necessary for connectivity to MACC Base.**

## **VII. COMMON PROCEDURES/GUIDELINES**

In most similar types of regional dispatch centers, there is a single, uniform method to dispatch calls for all participating communities. Although they utilize common radio frequencies, MACC Base has only a limited number of standard operating procedures/guidelines (SOP/Gs) because different departments utilize different procedures for the same types of calls. The lack of common protocols on how a fire/police/medical call should be dispatched requires every dispatcher to have a working knowledge of how each community and each public safety department desires their calls to be processed and dispatched. This situation mandates that each new dispatcher learn the local intricacies of dispatching calls to each participating agency which lengthens the time required to train new telecommunicators.

### **Recommendation VII-1:**

**The MACC Base BOG, Director, and the chiefs of the public safety agencies they serve should work collaboratively, and make it a priority, to develop and implement as many standardized dispatch and communications procedures as possible. Standardized procedures are necessary to reduce the potential for critical errors, reduce the time necessary for telecommunicator training, and be consistent with the standards required for CALEA Accreditation.**

## **VIII. PROPOSED MACC BASE COMMUNICATION SITE IMPROVEMENTS**

In reviewing the history of the MACC Base Communications organization for this study it became apparent to the MRI study team that the Director has been attempting to make improvements to the communications infrastructure for the center. He has discussed system improvement needs with the MACC BOG annually but has never really had the support necessary to move forward with most significant projects.

In October 2017, a draft communications system upgrade assessment and preliminary design was completed by Communications Design Consulting Group, LLC of Barrington, New Hampshire, and submitted to MACC Base for review. This purpose of this study was to provide the MACC Base BOG with the information needed to begin to prepare to upgrade and migrate their system infrastructure to current state public-safety technology standards, enhance radio coverage, and replace end-of-life equipment.

The Communications Design Consulting Group (CDCG) study recommendations included:

- New base stations, repeaters, and duplexers.
- New antennas and transmission lines.
- Development of new transmission sites

- Transmitter simulcast equipment.
- GPS synchronization equipment.
- Receiver voting equipment.
- Enhanced communication site grounding.
- Installation of lightning and surge protection.
- Installation of battery backup power to increase system redundancy.
- Conversion to microwave radio connectivity.
- Installation of new control stations.

There are numerous benefits to be realized from performing a comprehensive system upgrade. Seven major benefits are outlined below.

1. Migration of existing obsolete/end-of-life technology to current State public safety best practice for equipment and technology would improve wide area regional signal coverage, increase overall system performance, and expand system availability and reliability.
2. Migration to digital modulation could be implemented by the department, as it has significantly improved voice quality. Analog modulation is also an option.
3. Converting public safety communications to transmitter simulcast operations would mean multiple transmitters at various sites transmitting simultaneously to provide a larger signal coverage. Dispatchers would no longer have to select the correct site or transmitter to communicate. This requires GPS synchronization equipment and IP connectivity.
4. Conversion of all receivers at all communications sites to voting operations would improve the audio on every radio transmission. Receivers at each site would be connected to a central voting comparator where the best audio signal is selected and then re-routed to all simulcast transmitters for rebroadcast, and to the dispatch console.
5. Microwave radio migration to IP/Ethernet for site connectivity to the Dispatch Center would replace UHF links with microwave radio. UHF is not suitable for simulcast/voting operations. The system should be in a ring configuration to optimize microwave redundancy in a cost-effective manner.
6. A new 48 volt power supply should convert backup power from UPS type system to DC Battery-Rectifier operations, providing more efficient and reliable power sources.
7. A new alarm monitoring system would have equipment for performance-type surveillance, as well as site alarms to provide monitoring for various points at each of

the remote tower sites. The type of alarms would include: power failure, site entry, generator status and test, UPS (battery) status, transmitter power output monitoring, microwave link status, and video monitoring.

This report was presented to the MACC Base BOG which authorized the Director to seek quotes to determine projected costs to complete these upgrades. This was done in November 2017. One quote was received from Beltronics, Inc. for approximately \$1,560,500.00.

The MACC Director, working with the Mont Vernon Fire Department, also applied for a grant to install microwave units at all the MACC Base communication sites. This grant has been awarded to the town for use in upgrading the regional MACC Base communications equipment. The town and MACC are working through the process to allow them to purchase the equipment. The bid received in response to the RFP assumed that MACC Base would have the microwave units.

Based on the estimated costs received in response to the RFP, the Director developed a projected timeline to complete the project, which will phase in equipment purchases and installation over a three (3) year period from 2018 through 2020. The plan proposes that the updates would begin in 2018 when police equipment at all locations would be upgraded. EMS equipment would be upgraded in 2019, and fire equipment in 2020.



**FIGURE 37: MACC BASE PROPOSED INFRASTRUCTURE UPGRADES**

YEAR	GROUP	RADIO EQUIPMENT COST	EQUIPMENT INSTALLATION COST	TOTAL RADIO COST	OTHER COSTS	TOTAL COST
<b>SITE 1 – ABBOT HILL</b>						
2018	Police	\$34,750	\$11,750	\$46,500		
2019	EMS	\$17,975	\$ 6,750	\$24,725		
2020	Fire	\$17,975	\$ 6,750	\$24,725		<b>\$95,950</b>
<b>SITE 2 – FEDERAL HILL</b>						
2018	Police	\$52,875	\$13,750	\$66,625		
2019	EMS	\$23,975	\$6,750	\$30,725		
2020	Fire	\$23,975	\$6,750	\$30,725		<b>\$128,075</b>
<b>SITE 3 – MACC BASE</b>						
2018	Police	\$48,875	\$15,750	\$64,625	\$15,000 (antenna & combiner)	
2019	EMS	\$17,795	\$6,750	\$24,725		
2020	Fire	\$17,795	\$6,750	\$24,725		<b>\$129,075</b>
<b>SITE 4 – MONT VERNON FIRE STATION</b>						
2018	Police	\$48,875	\$13,750	\$62,625	\$10,000 (raise tower to 100')	
2019	EMS	\$17,975	\$6,750	\$24,725		
2020	Fire	\$17,975	\$6,750	\$24,725		<b>\$122,075</b>
<b>SITE 5 – PEAD HILL</b>						
2018	Police	\$34,750	\$11,750	\$46,500		
2019	EMS	\$17,975	\$6,750	\$24,725		
2020	Fire	\$17,975	\$6,750	\$24,725		<b>\$95,950</b>
<b>SITE 6 – WLC HIGH SCHOOL – WILTON (NEW SITE)</b>						
2018	Police	\$48,875	\$13,750	\$62,625	\$200,000 (tower/preparation/electric/HVAC)	
2019	EMS	\$17,975	\$6,750	\$24,725		
2020	Fire	\$17,975	\$6,750	\$24,725		<b>\$312,075</b>
<b>SITE 7 – BADGER HILL – MILFORD (NEW SITE)</b>						
2018	Police	\$48,875	\$13,750	\$62,625	\$202,000 (tower/preparation/electric/HVAC)	
2019	EMS	\$17,975	\$6,750	\$24,725		
2020	Fire	\$17,975	\$6,750	\$24,725		<b>\$314,075</b>
<b>SITE 8 – LYNDEBOROUGH DPW TOWER (NEW SITE)</b>						
2018	Police	\$48,875	\$13,750	\$62,625	\$12,000 (tower/preparation/electric/HVAC)	
2019	EMS	\$17,975	\$6,750	\$24,725	\$1,000/Month (operational leasing cost)	
2020	Fire	\$17,975	\$6,750	\$24,725		<b>\$124,075</b>
<b>SITE 9 – LAMSON ROAD CELL TOWER (NEW SITE)</b>						
2018	Police	\$48,875	\$13,750	\$62,625	\$127,075 (tower/preparation/electric/HVAC)	
2019	EMS	\$17,975	\$6,750	\$24,725	\$1,000/Month (operational leasing cost)	
2020	Fire	\$17,975	\$6,750	\$24,725		<b>\$239,150</b>
<b>Total</b>						<b>\$1,560,500.</b>

**Figure 37 Source: Beltronics Inc. 2017 estimate provided by MACC Base Director**

As noted previously, these cost projections assume that the microwave links are in place. The project is anticipated to be phased in over a three (3) year period. However, the largest costs will be incurred in the first year, primarily associated with the preparation and installation of new infrastructure that will be necessary at the four (4) new communications sites. It is the opinion of the MRI study team that the proposed system upgrades will address and correct most of the inherent problems with the system and will probably significantly improve the levels of communication service. The proposal includes a new communications site and tower in each of the participating municipalities. However, we qualify that opinion by stating that we are not communications engineers and did not review the data that Communications Design Consulting Group and/or Beltronics Inc. used to arrive at their conclusions. We also caution that, although the Town of Milford will have a second communications site within its borders, we cannot say for certain that they will achieve the level of communications reliability they are seeking.

The major problem that the MRI study team sees with the project proceeding revolves around the ever-present issue of how to fund it. MACC Base has no capital reserve account and is prohibited by State law from having one. As such, a capital improvement project of this magnitude generally can only be funded through the issuing of general obligation bonds which would be paid back over a certain period of time. However, since MACC Base exists only through an intermunicipal agreement rather than being an autonomous government entity, it cannot borrow the money or issue the bonds on its own; one of the towns would need to obtain the funding.

While no one would say definitively, it is difficult for us to believe that one of the towns would be willing to obtain the funding and assume the debt and liability on behalf of the others. The current IMA is up for renewal at the end of 2018, and towns can opt out of the agreement and MACC Base with minimal notice. The Milford Board of Selectmen (BOS) has proposed a number of articles of the IMA that they would like to have renegotiated as part of the renewal process. Their suggestions include several that are consistent with recommendations contained within this report. At least one town, Mont Vernon, has been exploring other possible options for dispatching. In addition, Lyndeborough is provided service on the basis of an annual contract. Without long term commitments from all participants that they will stay, it would not be advisable for any town to assume this risk.

As the largest municipality by far that utilizes MACC Base, Milford would be the logical member to do the borrowing. However, Milford should not have to take on this debt and the associated risk. If MACC Base is to survive, all of the participating towns need to determine an economically prudent and practical way to obtain the necessary capital funding. They will need to ensure that even if a town ends up withdrawing from the agreement that they will still be responsible for their continued payment obligations on the debt service. As noted later in this report, the study team anticipates a twenty-four (24) month period for the Town of Milford to transition away from MACC Base.

**Recommendation VIII-1:**

MACC Base and the Town of Mont Vernon should take steps as soon as the grant funding is awarded to procure and install the microwave links for the purpose of improving the existing regional communications system.

**Recommendation VIII-2:**

If MACC Base is going to remain operational by making the major infrastructure upgrades necessary, each participating town should assume the cost for its radio equipment and each of the communications sites built within their respective towns (an additional tower site is proposed for each town). This would result in each town basically owning their own communication system that has been integrated into the overall regional operation. However, if a town ever wanted to withdraw from MACC Base they would still retain their own equipment and infrastructure which could be used to connect them to their new dispatch site.

**Recommendation VIII-3:**

Where the use of communication system transmission sites may be shared use by more than one community, the town where the site is located should still own it, while the cost for radio equipment and installation used by the other town should be paid for by them. There could be a cost-sharing agreement for expenses such as utilities and basic upkeep and maintenance at the site.

**Recommendation VIII-4:**

Any capital improvements that are made at MACC Base, along with repair and maintenance of radios and equipment, should be funded based upon a fair and equitable formula agreed to by all participants.

## **IX. MILFORD POLICE DEPARTMENT DISPATCH FACILITY**

With the communication issues associated with MACC Base's aging equipment, and an inability of the MACC Base BOG and participating towns to arrive at a consensus regarding how to apportion the cost sharing for necessary system infrastructure upgrades, the Town of Milford began to explore options for developing its own dispatch operations, including possibly serving as a regional emergency communications center (RECC), much the same as MACC Base but with a different organizational approach. The MRI study teams believes that this is a prudent approach and definitely in the best interest of the Town of Milford.

After conducting interviews with representatives of the other communities that MACC Base serves, the MRI team does not believe that that the MACC Base participants will be able to resolve the financial issues that have long hampered efforts to keep the operation technologically up to date. As previously discussed, two of the towns believe that the

communications problems are primarily a Milford problem, and for the most part they have corrected their own communication gaps with the installation of mobile repeaters in their vehicles. MRI was informed that the Town of Milford has blocked approval of financing in the past. Two of the towns also indicated that they have done at least preliminary research on other options for handling their dispatching, so their level of commitment may also work against the service users coming up with an equitable formula to fund the necessary improvements. MACC Base's inability to borrow money to fund its own capital improvement needs further complicates the situation.

With no resolution to the MACC Base issues appearing to be achievable in the near future, the Town of Milford authorized the Milford Police Department to begin exploring the feasibility of taking over emergency dispatching operations for the town. As part of their exploration of other dispatching options, the Milford Police Department consulted with 2-Way Communications Services regarding establishing their own communications system with a dispatch center located at the Police Station, 19 Garden Street. Milford Police do have some radio equipment already but most of it is more than 25 years old, technologically obsolete, and well past its useful service life expectancy.

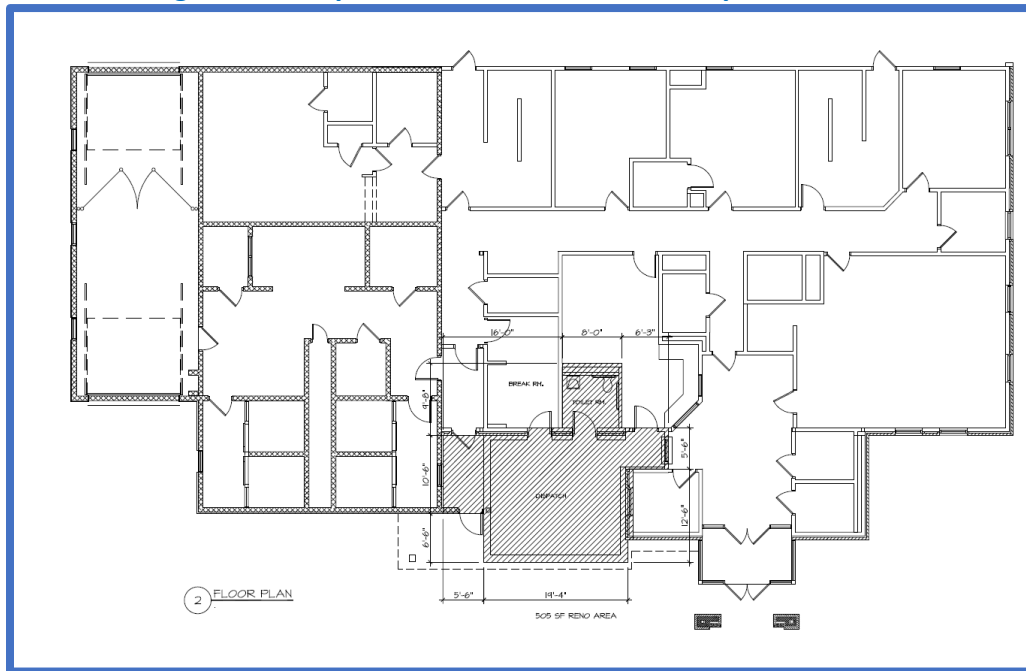
The system proposed by 2-Way Communication Services recommends the use of five (5) communication sites with the town. The location of these sites would be Milford Police Headquarters, Birch Hill, Dram Cup Water Tank, Summer Street, and, the Milford Water Department. The proposed configuration should significantly improve town emergency communications and eliminate many of the known "dead spots". This will allow emergency personnel to much more reliably communicate from incident locations throughout the town, even when utilizing their portable radios. Personnel operating in different areas of town (and possibly even adjacent towns) should be able to hear each other, thus eliminating the problem of units stepping on each other. The issues with static in the system should also be eliminated. Each of these things will not only improve daily emergency services operations, they will simultaneously increase emergency responder safety.

The Town of Milford is already installing fiber to various locations in the town which can be used to enhance the redundancy of the communication system (microwave would be the primary transmission method).

### **Milford Communications Site #1 – MILFORD POLICE DEPARTMENT**

Milford Police propose adding a 550 square foot addition to the front of the existing police station to house the dispatch center. Along with renovation of some adjacent areas in the existing building, the proposed dispatch center would be large enough for the initial installation of three (3) complete dispatch consoles. There would be adequate space for the installation of a fourth console in the future if operations warranted it.

**Figure 38: Proposed Floor Plan for MPD Dispatch Center**



**New 550 square foot addition/dispatch center is shown in shaded area**

**Figure 39: Proposed Front Elevation of MPD with New Addition**





Figure 40 (left): Current reception and police records area in existing police department lobby



Figure 41 (right): Reception and records area from the inside looking towards main entrance

**Estimated construction cost: \$350,000.00**

Communications equipment that will be installed at Milford police headquarters consists of:

- 4 - GTR 8000 base radios for Milford Police (MPD), Fire (MFD), EMS (MEMS), and Milford town government (MTGOV)
- 1 - Multi-coupler combiner for radio systems
- 3 - Motorola APX7500 dispatch consoles
- GPS equipment prime/TX/RT site
- 4 - Microwave links
- 1 - GCM 8000 voting comparator (MPD, REGPD)
- 3 - MCL 8000 voting comparators (MFD, MEMS, MTGOV, REGFD, REGEMS)
- 3 - MLC8000 mixed mode simulcast gateway (MFD, MEMS, MTGOV.)
- 180-foot self-supporting tower
- 6 – Omni antenna systems

**Police department equipment cost: \$419,968.80**

#### **Milford Communications Site #2 - BIRCH HILL IN HOLLIS, NH (Conceptual Site)**

This potential site is located just south of Milford's southern boundary in the Town of Hollis. It will provide coverage to the southern portion of Milford, along with the possibility of improved communications and interoperability with municipalities south of the town. Equipment at this site will be housed in a climate-controlled building.

Communications equipment that will be installed at Birch Hill consists of:

- 4 - GTR 8000 base radios for MPD, MFD, MEMS, and MTGOV
- 1 - Multi-coupler combiner for radio systems



- GPS equipment prime/TX/RT site
- 1 - Microwave link (PTP11820)
- 1 – Network gateway
- 3 - MLC8000 mixed mode simulcast gateway (MFD, MEMS, MTGOV)
- 2 - Omni antenna systems

**Birch Hill equipment cost: \$219,322.20**

### **Milford Communications Site #3 - DRAM CUP WATER TANK**

Dram Cup Tank is located in a westerly portion of the Town of Milford. Equipment at this site will be housed in a climate-controlled building.

Communications equipment that will be installed at Dram Cup Water Tank consists of:

- 4 - GTR 8000 base radios for MPD, MFD, MEMS, and MTGOV
- 1 - Multi-coupler combiner for radio systems
- GPS equipment prime/TX/RT site
- 1 - Microwave link (PTP11820)
- 1 – Network gateway
- 3 - MLC8000 mixed mode simulcast gateway (MFD, MEMS, MTGOV)
- 180-foot self-supporting tower
- 2 – Omni antenna systems

**Dram Cup Water Tank equipment cost: \$334,282.20**

### **Milford Communications Site # 4 - SUMMER STREET**

The Summer Street site is located in the northern section of the Town of Milford. This is a privately-owned site and already has a 130-foot communications tower on it. The town has an agreement with the owner to be allowed to place public safety radio antennas on it.

Communications equipment that will be installed at Summer Street consists of:

- 4 - GTR 8000 base radios for MPD, MFD, MEMS, and MTGOV
- 1 - Microwave link (PTP11820)
- 1 – Network gateway
- 3 - MLC8000 mixed mode simulcast gateway (MFD, MEMS, MTGOV)
- 1 – Omni antenna system

**Summer Street equipment cost: \$84,117.00**

### **Milford Communications Site # 5 – MILFORD WATER DEPARTMENT**

The Milford Water Department site is located in the eastern part of the Town of Milford. As a town owned site, this facility should be able to have fiber run to it to enhance the redundancy of the communication system.

Communications equipment that will be installed at The Milford Water Department which is located at 564 Nashua Street consists of:

- 4 - GTR 8000 base radios for MPD, MFD, MEMS, and MTGOV
- 1 - Microwave link (PTP11820)
- 1 – Network gateway
- 3 - MLC8000 mixed mode simulcast gateway (MFD, MEMS, MTGOV)
- 80-foot self-supporting tower
- Rack mounting equipment
- 1 – Omni antenna system

**Milford Water Department equipment cost: \$132,117.00**

The total proposed cost of the Town of Milford dispatching and communications link infrastructure network is **\$1,189,807.20**. The estimated cost of the addition and renovations to the Milford Police Department is **\$350,000.00**. This would bring the total project cost to **\$1,539,807.20**. As there will be other costs that will be incurred as part of this transition, the Town of Milford should build in some contingency and estimate that the project will cost about **\$1,750,000.00**.

Although the estimated cost for the Town of Milford is higher than what they would likely end up investing in the proposed MACC Base upgrades, with four (4) communications sites located within the town, and the Birch Hill site just over the town line in Hollis, communications would be greatly improved. In addition, Milford would fully own and control all of its radios and equipment, as opposed to the shared (and somewhat ambiguous) ownership involved with membership in MACC Base. As the largest participant by far in MACC Base, Milford would probably be the one which would need to obtain financing and/or issue bonds to provide the necessary funding for the system upgrades. With what we perceive as a lack of deep commitment and support from some of the other participants, doing so could present Milford with higher than normal risk in this regard. Although the town will still probably need to borrow money to fund the building of their own communications system, they would fully own and control the entire system. Based on the history of fiscal challenges, and with the uncertainties that the future holds regarding MACC Base, the MRI study team believes that this is a better option for Milford. It will also allow the town to seek funding for the project just once.

Benefits to Milford from this approach will include, but not necessarily be limited to:

- New, state of the art, environmentally controlled, dispatch center
- Ability to accommodate four (4) complete, fully functional dispatch consoles
- Initial outfitting with three (3) fully functional consoles. MACC Base currently has just two (2). The remainder will be installed in the future as operations require them.
- Three answering points in the dispatch center for 911 calls
- All brand new, modern, state of the art equipment that will incorporate the latest technology
- Environmentally controlled server room for all of the radios and a “backroom” with capacity for expansion that may be necessary for future growth
- Break room and bathroom facilities for the dispatch center personnel
- Redundancy of systems because the building will have a backup generator, and new equipment will include UPS battery backup systems to support electronic equipment
- High level security and full self-sufficiency for the purpose of handling emergency dispatch and communications operations
- Elimination of the current scenario in which the Milford Police Station is unstaffed, from 11AM until 7AM. This is referred to as the period when the station is “dark”. Currently this occurs from 11PM until 7AM, seven (7) days per week.

**Recommendation IX-1:**

**The Town of Milford should proceed with financing to install municipally-owned communications equipment at the proposed sites in the town. Whether the town stays with MACC Base, or if it decides to start its own dispatch operation, installing the recommended infrastructure at the in-town locations will significantly improve communications within the town.**

It is important to note that whether the town stays with MACC base or decides to initiate its own operation, it will probably take at least two (2) years to obtain approval from the voters at town meeting, obtain financing, and actually build out the necessary system, including the

addition to the Milford Police Department. During this time, the town will need to remain with MACC Base. However, this interval will allow sufficient time to plan for an orderly transition from one entity to the other.

**Recommendation IX-2:**

**The Town of Milford should initiate the process to assume responsibility for dispatching its own Police, Fire, EMS, DPW, and other town government functions.**

## **X. MILFORD DISPATCH CENTER CONFIGURATION, INCIDENT ANALYSIS, AND STAFFING**

Appropriately staffing the dispatch center is a critical element of success. To be effective and efficient, the staffing configuration must be balanced around the system volume. As such, an emphasis needs to be placed on both quality and productivity. This is in large part a cost/benefit or risk management equation. The result should be a staffing model that is flexible and should allow for “staffing up” if, and when, the center expands to include other communities.

In terms of training and certifications, the MACC Base Director stated that all of his staff have met or exceeded the necessary training for their respective tasks and responsibilities. This includes training with multiple external agencies. In addition, our observations concluded that MACC Base dispatch personnel perform their duties in a very proficient manner. In interviews with Milford public safety personnel, as well as emergency services personnel from the other three towns dispatched by MACC Base, it was unanimously expressed that MACC Base personnel are very professional and there were very rarely any operational issues with the dispatchers.

If Milford decides to initiate its own dispatch center, whether just for itself or to offer services to other communities, the town will need to develop clearly defined job descriptions for both a dispatch supervisor and dispatchers (often professionally referred to as *public safety telecommunicators*) that include the tasks associated with dispatching and supervising for Police, Fire, and EMS.

**Recommendation X-1:**

**The Town of Milford should develop job position descriptions and wage classifications for the positions of dispatch supervisor and public safety dispatcher or telecommunicator.**

**Recommendation X-2:**

**The dispatchers currently employed by MACC Base should be provided the first and primary opportunity to apply for, and be hired for, for dispatcher positions at the Milford Police**

Department since they are already familiar with the community, department, and emergency services operations in the town and surrounding area.

### **INCIDENT ACTIVITY ANALYSIS**

While society in general is slowly moving toward around-the-clock activity, Milford and the surrounding communities still maintain a portion of the day where activity, and thus emergency calls for service, is lower than the majority of the day. For MACC Base, this time is generally from the early morning hours to mid/late morning. For that reason, the center is staffed with only a single dispatcher from 3:00 AM to 11:00 AM. However, the dispatch center manager is usually in his office and available to assist early in the morning.

Over the three-year period from 2015 through 2017, Milford averaged 54,171 Police, Fire and EMS requests for service per year. This averages out to approximately 148 service requests per day, or 6.2 per hour. This number includes events such as self-directed motor vehicle stops, business security checks, and routine welfare checks, which can increase the statistical numbers significantly. With the addition of the other three communities currently served by MACC Base, the average number of calls increases to 71,175 per year, an average of 195 per day, or 8.1 per hour. This is slightly less than two (2) more per hour over Milford's own call volume.

Studies indicate that in many cases the average length of time for each police call for service is about ten minutes; however, as would be expected, significant incidents last much longer. Fire and EMS incidents tend to take longer. On medical emergencies, the dispatcher who took the initial call may need to stay on the phone to give lifesaving instructions to the caller until the first emergency responder arrives. This can often take several minutes. Incidents can often generate numerous 911 calls. Many incidents such as motor vehicle accidents also will generate a simultaneous response by all emergency services including Police, Fire, and EMS. It is also important to keep in mind that some estimates have found that only 20% of the calls an emergency dispatch center receives are 911 calls. The remainder are for a multitude of other reasons. We believe that these statistics from MACC Base include many of those other calls.

Regardless of the staffing levels normally utilized in a dispatch center, provisions need to be made to provide for increased staffing of the center when necessitated by a major fire, serious crime, or some other significant event such as a hurricane or blizzard, where additional personnel would be required to respond to a significant increase in call volume. Additional staffing would also be required for major planned events in any of the communities.

#### **Recommendation X-3:**

***A critical policy that must be developed is one that allows/requires dispatchers to be recalled to work during times of major incidents or anticipated significant events.***

## **STAFFING**

MACC Base staffing consists of six (6) full-time and 11 part-time personnel. Dispatchers work staggered ten-hour shifts from 7:00 AM to 5:00 PM, 11:00 AM to 9:00 PM, 5:00 PM to 3:00 AM, and 9:00 PM to 7:00 AM. There are two dispatchers on duty 16 hours per day from 11:00 AM to 3:00 AM. For the eight-hour time frame between 3:00 AM and 11:00 AM, there is normally only a single dispatcher assigned. MACC Base personnel are not unionized and do not have a collective bargaining agreement.

Existing studies offer some recommendations for staffing and center configurations. The Association of Public Safety Communications Officials (APCO) is a professional organization that sponsored a 2005 study on Communication Center staffing and retention. According to the *APCO Project RETAINS<sup>1</sup> Research Report (2005)* (see Appendix A), there is no set equation to determine staffing levels in a communications center. Certain variables, such as total call volume, size of population served, number of services provided, and number of client agencies dispatched, will affect the staffing requirements, but there is no widely accepted process used to calculate the “right” size center. Instead, proposed guidelines provide staffing approximations rather than concrete numbers. Often communications centers do not determine staffing levels proactively; they are managed reactively. Based on the samples studied in both APCO studies, smaller centers tend to determine staffing based on shift coverage needs and larger centers tend to staff for higher call volumes.

While not found in the current 2013 version, previous editions of NFPA Standard 1221, *Standard for the Installation, Maintenance, and Use of Emergency Services Communications Systems* contained an equation to measure the “*Number of Operators Needed*” based on the volume of alarm calls. According to this standard<sup>2</sup>:

(a) “For jurisdictions receiving 600 to 2,500 alarms per year, at least one operator shall be on-duty in the communications center.

(b) For jurisdictions receiving more than 2,500 to 10,000 alarms per year, at least two operators shall be on-duty in the communications center.”

This standard is effective in performing the technical calculation of the Fire Suppression Rating Schedule (FSRS) for the Insurance Service Office/Commercial Risk Services (ISO/CRS), and offers some assistance in developing a staffing plan for a combined dispatch center; however, it is primarily focused on fire and, to a lesser extent, EMS incidents.

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<sup>1</sup> Responsive Efforts to Assure Integral Needs in Staffing (RETAINS)

<sup>2</sup> NFPA 1221, *Installation, Maintenance and Use of Public Fire Service Communication Systems*, 1991, para. 2.



In this report, we present the Town of Milford with what we believe is a reasonable staffing plan. This scenario recommends that the dispatch center function as a unit within the Police Department. We believe that it would be most cost effective for Milford to continue to be staffed by a combination of full-time and part-time personnel. The following discusses assumptions that we made in calculating our projected costs and budgets.

### **RDC Supervisor**

One supervisor position is recommended, responsible for managing the day-to-day administration and operation of the center, and should report directly to the assigned Milford Police Captain. At the present time, we believe the manager can continue to work a schedule that allows spending 50% of his/her time performing supervisory and administrative work, and the other 50% of the time as a working dispatcher.

### **Full-time Dispatchers**

According to the APCO RETAINS Study, for small centers serving a population of less than 19,000, dispatchers average about 1,350 calls logged per year, although some handled up to 6,500. For medium-sized centers serving a population between 19,000 and 100,000, dispatchers average about 3,500 calls logged per year but can handle up to 10,000. However, we were unable to use these estimates for the calculation of necessary staffing because the calls for service provided by MACC Base are inordinately high, which would have resulted in an extremely high level of staffing, which obviously is not needed.

However, we do believe that, whenever possible, there should be two dispatchers on duty at all times. This situation provides for dispatcher safety, as well as more effective coordination and communications with emergency responders when multiple public safety agencies must be dispatched to the same incident or to simultaneous incidents. Although MACC Base currently operates with just a single dispatcher on duty for eight (8) hours each day, we suggest that Milford consider constant two-person staffing, particularly if there is a decision to offer dispatching services to other communities.

### **Part-time Dispatchers**

MACC Base relies heavily on part-time personnel to staff their dispatch positions. We suggest that the Milford Police Department continue this practice.

### **Recommendation X-4:**

**The Milford Police Department should give consideration to staffing the dispatch center with two dispatchers on-duty, per shift, 24 hours a day.**

Under our recommended staffing plan, the RDC would be staffed by six (6) full-time and multiple part-time personnel who would fill a total of about 96 staff hours per week, which is about 28.6% of necessary weekly staff hours to keep two (2) personnel on duty at all times. Hiring one or two additional full-time personnel would lessen the time necessary for scheduling part-time personnel and increase consistency; however, it would also increase costs through benefit packages.

- **1 – Dispatch Center Supervisor** who would be responsible for day-to-day management and operation of the center. This person would also serve as a dispatcher 50% of the time.
- **5 – Full-time Call Takers/Dispatchers**
- **Part-time Call Takers/Dispatchers** who would fill about 96 staff hours per week necessary to provide recommended 24/7 staffing. These personnel could also be used to fill shift vacancies created by full-time personnel on various types of leave.

**Figure 42: Estimated Salary and Benefits Costs for Two-Person 24/7 Staffing**

Salaries + Benefits										
	Hourly Rate	Annual	Health+Dental	Cost	FICA/Medi	Retirement	Holiday (10)	Burden	Total	
Supervisor	\$ 31.25	\$ 65,000	Family	\$ 19,455	\$ 5,164	\$ 7,614	\$ 2,500	\$ 34,733	\$ 99,733	
Dispatcher 1	\$ 21.64	\$ 45,011	Family	\$ 19,455	\$ 3,576	\$ 5,273	\$ 1,731	\$ 30,035	\$ 75,046	
Dispatcher 2	\$ 19.71	\$ 40,997	Single +1	\$ 14,515	\$ 3,257	\$ 4,802	\$ 1,577	\$ 24,151	\$ 65,148	
Dispatcher 3	\$ 19.71	\$ 40,997	Single +1	\$ 14,515	\$ 3,257	\$ 4,802	\$ 1,577	\$ 24,151	\$ 65,148	
Dispatcher 4	\$ 19.71	\$ 40,997	Single	\$ 7,457	\$ 3,257	\$ 4,802	\$ 1,577	\$ 17,093	\$ 58,090	
Dispatcher 5	\$ 19.71	\$ 40,997	Single	\$ 7,457	\$ 3,257	\$ 4,802	\$ 1,577	\$ 17,093	\$ 58,090	
		\$ 273,998		\$ 82,854	\$ 21,767	\$ 32,096	\$ 10,538	\$ 147,255		\$ 421,254
Overtime	Avg hrs per month									
Supervisor	0	\$ -	(None, Salary)		\$ -	\$ -		\$ -	\$ -	
Dispatcher 1	12	\$ 4,674.24			\$ 358	\$ 527		\$ 885	\$ 5,559	
Dispatcher 2	12	\$ 4,257.36			\$ 326	\$ 480		\$ 806	\$ 5,063	
Dispatcher 3	12	\$ 4,257.36			\$ 326	\$ 480		\$ 806	\$ 5,063	
Dispatcher 4	12	\$ 4,257.36			\$ 326	\$ 480		\$ 806	\$ 5,063	
Dispatcher 5	12	\$ 4,257.36			\$ 326	\$ 480		\$ 806	\$ 5,063	
										\$ 25,812
Part Time Allowance			hrs/week							
PT Shift	\$ 20.00	\$ 99,840	96		\$ 7,638			\$ 7,638	\$ 107,478	
PT Allowance	\$ 20.00	\$ 5,200	5		\$ 398			\$ 398	\$ 5,598	
										\$ 113,076
									Payroll Total =	\$ 560,141

Source: Base cost data provided by the Town of Milford

**Recommendation X-5:**

In order to operate in the most cost-effective manner possible, the Milford Police Dispatch Center should use a staffing plan comprised of a combination of full and part-time personnel.

**Recommendation X-6:**

The Milford Police Dispatch Center should employ a total of six (6) full-time and multiple part-time personnel to provide proper 24/7 staffing.

**Recommendation X-7:**

The full-time Milford Police Dispatch Center staffing should consist of one (1) supervisor and five (5) call takers/dispatchers.

**Recommendation X-8:**

The Milford Police Dispatch Center supervisor should split his/her time between administrative duties and serving as a line dispatcher.

There are two other staffing options that Milford could consider if they are not convinced of the need to staff the center with two (2) personnel around the clock. The first one is to continue with the practice of MACC Base which is to have just a single dispatcher on duty for eight (8) hours per day. A variation, which also follows MACC Base practice, would be to have the supervisor report to work at 7:00 AM and complete administrative duties from 7:00 AM to 11:00 AM before sitting at a dispatch console. When necessary, the supervisor should normally be available to assist the on-duty dispatcher when needed. On weekends this option would not be available. Not staffing the center with two personnel for eight (8) hours each day would reduce personnel expenses by about \$62,695.00 or 11.2% per year.

**Figure 42: Estimated Salary and Benefits Costs for Two-Person 16/7 Staffing**

Salaries + Benefits										
	Hourly Rate	Annual	Health+Dental	Cost	FICA/Medi	Retirement	Holiday (10)	Burden	Total	
Supervisor	\$ 31.25	\$ 65,000	Family	\$ 19,455	\$ 5,164	\$ 7,614	\$ 2,500	\$ 34,733	\$ 99,733	
Dispatcher 1	\$ 21.64	\$ 45,011	Family	\$ 19,455	\$ 3,576	\$ 5,273	\$ 1,731	\$ 30,035	\$ 75,046	
Dispatcher 2	\$ 19.71	\$ 40,997	Single +1	\$ 14,515	\$ 3,257	\$ 4,802	\$ 1,577	\$ 24,151	\$ 65,148	
Dispatcher 3	\$ 19.71	\$ 40,997	Single +1	\$ 14,515	\$ 3,257	\$ 4,802	\$ 1,577	\$ 24,151	\$ 65,148	
Dispatcher 4	\$ 19.71	\$ 40,997	Single	\$ 7,457	\$ 3,257	\$ 4,802	\$ 1,577	\$ 17,093	\$ 58,090	
Dispatcher 5	\$ 19.71	\$ 40,997	Single	\$ 7,457	\$ 3,257	\$ 4,802	\$ 1,577	\$ 17,093	\$ 58,090	
		\$ 273,998		\$ 82,854	\$ 21,767	\$ 32,096	\$ 10,538	\$ 147,255		\$ 421,254
Overtime	Avg hrs per month									
Supervisor	0	\$ -	(None, Salary)		\$ -	\$ -		\$ -	\$ -	
Dispatcher 1	12	\$ 4,674.24			\$ 358	\$ 527		\$ 885	\$ 5,559	
Dispatcher 2	12	\$ 4,257.36			\$ 326	\$ 480		\$ 806	\$ 5,063	
Dispatcher 3	12	\$ 4,257.36			\$ 326	\$ 480		\$ 806	\$ 5,063	
Dispatcher 4	12	\$ 4,257.36			\$ 326	\$ 480		\$ 806	\$ 5,063	
Dispatcher 5	12	\$ 4,257.36			\$ 326	\$ 480		\$ 806	\$ 5,063	
										\$ 25,812
Part Time Allowance			hrs/week							
PT Shift	\$ 20.00	\$ 41,600	40		\$ 3,182			\$ 3,182	\$ 44,782	
PT Allowance	\$ 20.00	\$ 5,200	5		\$ 398			\$ 398	\$ 5,598	
										\$ 50,380
Payroll Total =										\$ 497,446

Source: Base cost data provided by the Town of Milford

**Recommendation X-9:**

**The number of Milford Police dispatchers should be adjusted based on call volume and number of communities. This flexibility allows for staffing based upon needs, as well as allowing for future growth.**

**Salary Ranges**

A competitive wage and benefits package will continue to attract and retain well-qualified employees and can perpetuate the goal of creating a professional center with low employee turnover and high morale.

**Recommendation X-10:**

**The Town of Milford should look at other dispatch centers to ensure they are offering a wage and benefits package that is competitive with what is presently being offered in the Southern New Hampshire area.**

**Operating Expenses**

For most dispatch centers, annual non-salary operating expenses are generally about 10% of the personnel budget. For the proposed Milford Police Dispatch Center, this would equate to about \$50,000.00 per year.

## **XI. TRAINING**

Proper training for public safety telecommunications personnel is mission-critical to the effective and efficient operations of emergency communications centers. The 911 operator or dispatcher is generally the first point of contact for the public during serious crises in their lives. How well they perform their job, and the key decisions that they make, can literally have life or death consequences.

One of the best ways to improve the knowledge, skills, and abilities of dispatch personnel is to provide them with additional appropriate training. This will allow them to function more effectively as an emergency Public Safety Telecommunicators. There are a number of resources available for obtaining this training.

APCO International is the world's oldest and largest organization dedicated to public safety communications professionals and supports a large U.S. membership base. This nonprofit professional and educational organization has been in existence since 1935. It serves the needs of public safety communications practitioners worldwide and the welfare of the general public as a whole by providing complete expertise, professional development, technical assistance, advocacy, and outreach.

APCO offers affordable options for training and certification programs that are used throughout the country by emergency communications personnel. Classes are offered in a number of different formats and configurations. Contract classes offer the agency the opportunity to schedule classes for their staff, in-house and on a schedule that meets their needs. Co-host classes are sponsored in conjunction with APCO but provide the training opportunity to other communication centers and personnel in the immediate area. They also offer most classes in an online, internet-based format. These classes are accessible 24/7, making them ideal for shift-working emergency communications center personnel.

**Recommendation XI-1:**

In addition to completion of the minimum, basic training required by the State of New Hampshire, ALL personnel employed by the Milford Police Dispatch Center should be required to complete the advanced training/certification classes listed below.

**Figure 44: Recommended Minimum Training for All Dispatch Personnel**

COURSE	DURATION	ON-LINE	COST PER PERSON
Public Safety Telecommunicator	5 days		\$309.00
	4 weeks	YES	\$379.00
EMD Program	3 weeks	YES	\$249.00
Law Enforcement Communications	6 weeks	YES	\$439.00
Fire Service Communications	4 days		\$379.00
	6 weeks	YES	\$439.00
Disaster Operations & the Communications Center	1 day		\$199.00
	3 weeks	YES	\$249.00
Active Shooter Incidents for Public Safety Communications	1 day		\$199.00
	3 weeks	YES	\$249.00
Crisis Negotiations for Telecommunicators	1 day		\$199.00
	3 weeks	YES	\$249.00
Customer Service in Today's Public Safety Communications	1 day		\$199.00
	3 weeks	YES	\$249.00
Comprehensive Quality On Line	4 weeks	Yes	\$379.00



**Recommendation XI-2:**

***Based on experience and ability, one of the senior full-time dispatchers should be selected for the position of training officer to oversee and coordinate all training for the dispatch center. The supervisor should also be certified to conduct training.***

**Figure 45: Recommended Training for Dispatch Center Training Officer**

COURSE	DURATION	ON-LINE	COST PER PERSON
Communications Center Training Officer	3 days		\$349.00
	6 weeks	YES	\$439.00
Communications Training Officer Instructor	5 days		\$459.00
	6 weeks	YES	\$509.00
Emergency Medical Dispatcher Course Instructor	5 days		\$459.00
	6 weeks	YES	\$509.00

**Recommendation XI-3:**

**The Dispatch Center supervisor should be required to complete appropriate supervisory, management, and leadership training courses, and/or certification programs.**

**Figure 46: Recommended Training for Dispatch Center Supervisor**

COURSE	DURATION	ON-LINE	COST PER PERSON
Communications Center Supervisor Course	3 days		\$349.00
	5 weeks	YES	\$439.00
Public Safety Communications Staffing & Employee Retention	1 day		\$199.00
	3 weeks	YES	\$249.00
Leadership Certificate Program	Offered Quarterly	YES	\$995.00

In order for all of the personnel employed by the RDC to complete all of the courses recommended for their level of responsibility, the total cost for training would be significant. This assumes the online option is chosen and personnel complete the training during their regular work shifts. However, we assume that some of the dispatchers may have completed at least some of the basic training classes, so the training funding needed will probably be lower. In any case, the Milford Police Department could budget to complete this training over several fiscal years.

## **XII. FEASIBILITY OF CONTINUED REGIONAL OPERATIONS**

Since Milford provides 71% of MACC Base's funding, the MRI study team believes with a high level of certainty that if the town withdraws and initiates its own dispatch operation, MACC Base will no longer be able to exist. It would be left with just three small communities, one of which operates on an annual fee for service contract. It is difficult to picture a scenario in which they would be able to remain financially viable. This situation could open additional opportunities for Milford. It is the opinion of the MRI study team that the proposed dispatch center at the Milford Police Department could easily handle the addition of several more similar sized communities, should any other municipalities wish to join in a regional endeavor.

The Town of Mont Vernon has already been approved for a grant to install microwave links for regional communications at the current MACC Base dispatch sites. A licensed 18 GHz microwave system is the preferred choice for primary connectivity from the various communications sites to the main dispatch/communications center. Microwave is considered by some to be a more reliable option than others for connectivity. Although the initial capital expenses are greater, it offers long-term cost savings, as there is no middle company to deal with, no monthly user fees, and all the equipment is locally owned (although the same holds true with municipally-owned fiber systems). In addition, it allows for future expansion of other users and/or systems on the microwave hops, if the agencies choose, or there was a desire to bring additional communities into any type of regional endeavor.

Milford has committed to connecting its own internal public safety sites utilizing town-owned fiber optic lines. While this option has higher upfront costs as compared with leasing lines, in the long term it will probably be more cost effective over the line's normal life expectancy. The town should also consider running fiber lines as a backup for their communications sites. However, should the town proceed with offering dispatching services on a regional basis, the microwave option will probably still be the option of choice to connect other communities to the Milford Police Dispatch Center.

With the new microwave links in place in the current MACC Base system, and with new town-owned infrastructure installed in a much more robust Milford system, the other MACC Base

members would still be able to communicate with, or through, Milford if MACC Base were to cease operations. This would require some modification to existing sites and systems, so they could fully integrate with a new system in Milford. The cost of these modifications should be borne by the town in which the equipment is located. The necessary modifications are outlined below.

#### **ABBOT HILL (located in the Town of Wilton)**

Communications equipment that would need to be installed at Abbot Hill consists of:

- Base radios
- Multi-coupler combiner for radio systems
- Mixed mode network simulcast gateway
- 60-foot monopole tower
- Climate-controlled equipment building

**Abbot Hill equipment cost: \$126,123.00**

#### **PEAD HILL (located in the Town of Wilton)**

Communications equipment that would need to be installed at Pead Hill consists of:

- Base radios
- Multi-coupler combiner for radio systems
- Mixed mode network simulcast gateway
- 60-foot monopole tower
- Climate-controlled equipment building

**Pead Hill equipment cost: \$126,123.00**

#### **MONT VERNON**

Communications equipment that would need to be installed at Mont Vernon consists of:

- Base radios
- Multi-coupler combiner for radio systems
- Mixed mode network simulcast gateway
- 60-foot self-supporting tower

**Mont Vernon equipment cost: \$150,923.00**

With the high likelihood that MACC Base will dissolve if Milford pulls out, the Town and Police Department leadership in the town stressed to the MRI study team that they would be very interested in offering other communities, particularly former MACC Base users, the same services they now receive. It is their intention to offer those services as close to the current cost as possible.

**Recommendation XII-1:**

The towns of Wilton, Mont Vernon, and Lyndeborough should consider making an investment in capital infrastructure to upgrade radios and equipment in each of their respective towns and correct known system deficiencies.

**Recommendation XII-2:**

Should the Town of Milford decide to leave MACC Base and initiate its own dispatch center, the Town Manager and Public Safety Chiefs should meet with their colleagues from Wilton, Mont Vernon, and Lyndeborough to offer them the dispatching services of the Town of Milford Police Department. Consideration should also be given to offering dispatching services to other nearby - preferably contiguous - towns as well.

**Recommendation XII-3:**

Any town that may seek dispatching services from a new Milford communications center should work collaboratively with Milford and its own communications vendors to determine the appropriate types of equipment upgrades needed to fully integrate its system with Milford's system.

### **XIII. REGIONAL SERVICE GOVERNANCE**

If Milford were to decide that it was in its best interest to offer dispatching services regionally to other municipalities, the Town of Milford should have jurisdictional authority. As such, the dispatch center would be a function of, and solely under, the auspices of the Town of Milford. Any other municipalities wanting to participate in the endeavor would contract with Milford to provide them with specified emergency dispatching and communications services. Under this scenario, the dispatch center personnel will be employees of the Town of Milford. The Milford Police Chief would be responsible for the hiring, training, evaluating, discipline, and termination of the dispatchers. The employees would be supervised by a dispatch center supervisor who would report directly to one of the Milford Police Captains.

In order to ensure that the other participants are satisfied with the service and their needs are being met in an ongoing manner, it would be wise for Milford to establish an advisory operational board comprised of the Police Chiefs, Fire Chiefs and EMS Director - or their representatives - from each of the participating communities. This board could be responsible for assisting with the development of standardized operational procedures used by the dispatch center. However, since the development of a standard set of procedures and protocols for Police and Fire are vastly different endeavors, consideration should be given to the formation of a Police subcommittee to address law enforcement concerns, and a separate Fire subcommittee to work on Fire and EMS issues. An advisory board comprised of the Milford Town Manager, along with the managers of any other communities that are contracting for

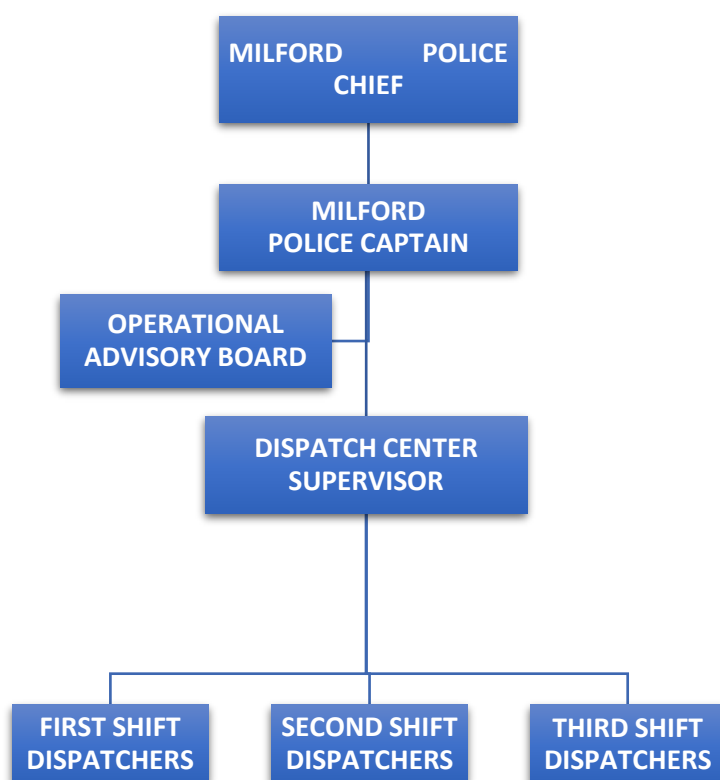
service, might also be advisable to allow for discussions that would be appropriate for that level of management. These details can be negotiated and agreed upon as part of the contracts or agreements among the participants.

**Recommendation XIII-1:**

***Should the Town of Milford decide to offer dispatch services on a contract basis to other communities, an advisory operational board comprised of the Police and Fire Chiefs of each participating community should be created for the purpose of assisting with the development of standardized operational procedures used by the dispatch center. Consideration should also be given to separate Police and Fire subcommittees.***

In order to facilitate what we believe would be the most straightforward lines of communications between the emergency services chiefs of the participating municipalities, the organizational chart below is recommended.

**FIGURE 47: RECOMMENDED ORGANIZATIONAL CHART  
FOR A POTENTIAL REGIONAL DISPATCH OPERATION**



#### **XIV. FINANCIAL APPORTIONMENT**

There are several different methods used by regional communications or dispatch centers to determine the financial commitment necessary from each participating community or agency to fund operations. With the first, each participating community pays an equal share of the center's operating cost. This option is generally employed when all three communities are relatively similar in size and/or incident volume or when they are considering a stand-alone regional endeavor. Neither is the case with the Milford Police Dispatch Center.

A second option is for the participants to apportion costs based on call volume, population, and/or other demographic factors. Some regional centers utilize more complex formulas that incorporate more than one of these criteria to allocate cost share. However, as different communities use different data tracking and incident assignment criteria, much of the data necessary to accurately divide these costs is often not readily available. Also, allocating call volume into cost share can adversely impact communities that experience a major event or a series of events during a year, increasing their call volume and requiring them to assume a larger share of the financial burden. Examples are a tornado touching down, a plane crash, a chemical leak, or a major fire.

A third option for funding is to assess each participating municipality a set cost per capita. For instance, the current established cost per person to participate in the Essex County, MA RECC is \$16.26, a per capita cost which is probably going to be increased. While this option may be similar to the final - and recommended - option we present below, it is more complicated in that some type of formula must be developed to determine the per capita fee per participant.

Unless there is some compelling reason to do otherwise, such as a facility in one community that produces an inordinate number of emergency responses - at least several per day - the simplest and most equitable way to apportion cost share for this type of endeavor is for each community to pay based upon its population, and the percentage of the total that its population represents to the entire regional operation. This is how cost is currently allocated for MACC Base. Utilizing this method makes the financial calculation for each community straightforward and does not penalize any community for having a major incident or other unusual spike in call volume during any given year. In the end, Milford plans to offer its town's services to other communities on a contract basis, so Milford will ultimately be the authority that determines the funding formula for any regional or contract dispatch operations. While this should eliminate some of the fiscal issues that have hampered MACC Base, Milford must be cognizant of the fact that it will ultimately be totally responsible for maintenance of its own system. The other communities should likewise be responsible for the system components they own. Revenue generated by offering contract services to other communities will strictly serve to offset Milford's operating expenses.



Under a strictly population-based funding system, since cost share is determined by percentage of total population, each community would be expected to automatically fund any increases in the communications center budget proportional to its overall contribution. However, this would need to be stipulated in any contract for service. The percentages for population would only need to be adjusted once every ten years when new census figures are released. If additional communities join the dispatch center at a later time, or if a participant leaves, the percentage that each community pays can be easily adjusted based upon the new total population served. However, particularly if the percentage of cost was going to increase because of a member departure, the provisions for how this is to be handled should be stipulated within the contract for service.

**Recommendation XIV-1:**

**The Town of Milford should offer contract emergency dispatch and communications services to surrounding communities for a fee, based upon that community's percentage of the overall population served by the Milford Police Dispatch Center.**

**Recommendation XIV-2:**

**To the extent possible, Milford should consider offering the same dispatch services under contract that MACC Base presently does. Also, to the extent possible, Milford should attempt, at least initially, to do this for the same cost other communities now pay. However, any infrastructure improvements necessary for the other towns should be done at their own expense as they will own and maintain their own systems.**

**Recommendation XIV-3:**

**Once the new dispatch center is built at the Milford Police Department, the square footage of the dispatch area should be calculated to determine what percentage of the Police building it occupies. The cost of utilities should be estimated so that the dispatch center can be charged for a percentage share of the overall cost of the utilities, based on the percentage of the building it uses. This becomes important when, and if, Milford decides to offer dispatching services to other communities.**

## **XV. OPERATIONS**

As identified in previous sections of this report, configuration, staffing, and deployment models will be critical to the successful operation of the new Milford Police Dispatch Center, particularly if the town offers services to other communities in more of a regional endeavor. Although Milford would be the authority for the center, providing services under contract to the other towns, all of the participating towns have a stake in the center and how successful it will be at meeting their needs. As such, there should be some level of involvement by all the potential participants in its operations.

Once the new dispatch center is built and ready to become operational, all of the new hardware and software systems and programs should be tested by the Town of Milford and its Police, Fire, and Ambulance to be certain the systems are functioning correctly prior to transitioning from MACC Base. This testing should last for a minimum of 30 to 60 days. If the town decides to offer services to other communities, when the time comes to transition them from MACC Base or other dispatch centers, it can be anticipated that there will be problems with moving all of the technology from one location to another. This is normal. However, it is advisable to transition one community at a time so that full attention can be given to dealing with its issues and ensuring that they are resolved completely.

### **Recommendation XV-1:**

**Should the Milford Police Department decide to offer dispatch services to other communities, once the dispatch center is ready to accept additional towns wanting to join, it is recommended that there be a minimum of 60 days between the times each town transitions into the center. This will allow sufficient time for technical glitches to be resolved.**

## **XVI. SUMMARY OF RECOMMENDATIONS**

The following represents a summary of thirty-one (31) recommendations developed within this report, these recommendations are listed by chapter.

### **CHAPTER V -EXISTING COMMUNICATIONS SYSTEM AND INFRASTRUCTURE**

#### **Recommendation V-1:**

With support and assistance from their State Representatives, and regardless of their ultimate decision on whether to remain with MACC Base, the Town of Milford should explore the possibility/feasibility of constructing a new communications tower and site at the Federal Hill location.

- Option 1:** Erect a 110' monopole communications tower. As part of this process the town should consider negotiating with U.S. Cellular for use of their existing equipment building for the placement of radios as it has environmental controls. Permission to use the building could be a tradeoff for allowing U.S. Cellular use of the monopole tower.
- Option 2:** Consider relocating all Milford Fire, Police and EMS radio equipment to this location and constructing a Milford-only public safety tower site.
- Option 3:** If it is deemed to be infeasible to construct a new tower and/or necessary approvals cannot be obtained the town and/or MACC Base should work collaboratively with the State to re-engineer and strengthen the existing tower to allow the proper attachment of necessary communications antennas for Fire, Police, EMS and U.S. Cellular. This option would also involve possible use of the U.S. Cellular building for the public safety radios.

#### **Recommendation V-2:**

The Town of Milford and MACC Base should work collaboratively with the State of New Hampshire and U. S. Cellular to provide site security to the Federal Hill facility. The entire site should be fenced in and security cameras should be installed so that MACC Base personnel can monitor the site for possible vandalism in real time.

#### **Recommendation V-3:**

Additional site security should be considered for the Pead Hill communications site. The entire site should be fenced in and security cameras should be installed so that MACC Base personnel can monitor the site for possible vandalism in real time.

**Recommendation V-4:**

Whenever feasible/possible, the other MACC Base member communities should consider replacing all their existing copper lines and circuits with new fiber optic lines that will continue to be supported.

**CHAPTER VI - STAKEHOLDER PERCEPTIONS/CONCERNS REGARDING MACC BASE**

**Recommendation VI-1:**

Each municipality should be responsible for the purchase and upkeep of all radio communications equipment used by their town departments, as well as communications sites located within their borders. Each town should also be responsible for the cost of establishing and maintaining (and would also own) infrastructure necessary for connectivity to MACC Base.

**CHAPTER VII - COMMON PROCEDURES/GUIDELINES**

**Recommendation VII-1:**

The MACC Base BOG, Director, and the chiefs of the public safety agencies they serve should work collaboratively, and make it a priority, to develop and implement as many standardized dispatch and communications procedures as possible. Standardized procedures are necessary to reduce the potential for critical errors, reduce the time necessary for telecommunicator training, and be consistent with the standards required for CALEA Accreditation.

**CHAPTER VIII - PROPOSED MACC BASE COMMUNICATION SITE IMPROVEMENTS**

**Recommendation VIII-1:**

MACC Base and the Town of Mont Vernon should take steps as soon as the grant funding is awarded to procure and install the microwave links for the purpose of improving the existing regional communications system.

**Recommendation VIII-2:**

If MACC Base is going to remain operational by making the major infrastructure upgrades necessary, each participating town should assume the cost for its radio equipment and each of the communications sites built within their respective towns (an additional tower site is proposed for each town). This would result in each town basically owning their own communication system that has been integrated into the overall regional operation. However, if a town ever wanted to withdraw from MACC Base they would still retain their

own equipment and infrastructure which could be used to connect them to their new dispatch site.

**Recommendation VIII-3:**

Where the use of communication system transmission sites may be shared use by more than one community, the town where the site is located should still own it, while the cost for radio equipment and installation used by the other town should be paid for by them. There could be a cost-sharing agreement for expenses such as utilities and basic upkeep and maintenance at the site.

**Recommendation VIII-4:**

Any capital improvements that are made at MACC Base, along with repair and maintenance of radios and equipment, should be funded based upon a fair and equitable formula agreed to by all participants.

**CHAPTER IX - MILFORD POLICE DEPARTMENT DISPATCH FACILITY**

**Recommendation IX-1:**

The Town of Milford should proceed with financing to install municipally-owned communications equipment at the proposed sites in the town. Whether the town stays with MACC Base, or if it decides to start its own dispatch operation, installing the recommended infrastructure at the in-town locations will significantly improve communications within the town.

**Recommendation IX-2:**

The Town of Milford should initiate the process to assume responsibility for dispatching its own Police, Fire, EMS, DPW, and other town government functions.

**CHAPTER X - MILFORD DISPATCH CENTER CONFIGURATION, INCIDENT ANALYSIS, AND STAFFING**

**Recommendation X-1:**

The Town of Milford should develop job position descriptions and wage classifications for the positions of dispatch supervisor and public safety dispatcher or telecommunicator.

**Recommendation X-2:**

The dispatchers currently employed by MACC Base should be provided the first and primary opportunity to apply for, and be hired for, for dispatcher positions at the Milford Police

Department since they are already familiar with the community, department, and emergency services operations in the town and surrounding area.

**Recommendation X-3:**

*A critical policy that must be developed is one that allows/requires dispatchers to be recalled to work during times of major incidents or anticipated significant events.*

**Recommendation X-4:**

The Milford Police Department should give consideration to staffing the dispatch center with two dispatchers on-duty, per shift, 24 hours a day.

**Recommendation X-5:**

In order to operate in the most cost-effective manner possible, the Milford Police Dispatch Center should use a staffing plan comprised of a combination of full and part-time personnel.

**Recommendation X-6:**

The Milford Police Dispatch Center should employ a total of six (6) full-time and multiple part-time personnel to provide proper 24/7 staffing.

**Recommendation X-7:**

The full-time Milford Police Dispatch Center staffing should consist of one (1) supervisor and five (5) call takers/dispatchers.

**Recommendation X-8:**

The Milford Police Dispatch Center supervisor should split his/her time between administrative duties and serving as a line dispatcher.

**Recommendation X-9:**

The number of Milford Police dispatchers should be adjusted based on call volume and number of communities. This flexibility allows for staffing based upon needs, as well as allowing for future growth.

**Recommendation X-10:**

The Town of Milford should look at other dispatch centers to ensure they are offering a wage and benefits package that is competitive with what is presently being offered in the Southern New Hampshire area.



## **CHAPTER XI – TRAINING**

### **Recommendation XI-1:**

In addition to completion of the minimum, basic training required by the State of New Hampshire, ALL personnel employed by the Milford Police Dispatch Center should be required to complete the advanced training/certification classes listed below.

### **Recommendation XI-2:**

*Based on experience and ability, one of the senior full-time dispatchers should be selected for the position of training officer to oversee and coordinate all training for the dispatch center. The supervisor should also be certified to conduct training.*

### **Recommendation XI-3:**

The Dispatch Center supervisor should be required to complete appropriate supervisory, management, and leadership training courses, and/or certification programs.

## **CHAPTER XII - FEASIBILITY OF CONTINUED REGIONAL OPERATIONS**

### **Recommendation XII-1:**

The towns of Wilton, Mont Vernon, and Lyndeborough should consider making an investment in capital infrastructure to upgrade radios and equipment in each of their respective towns and correct known system deficiencies.

### **Recommendation XII-2:**

Should the Town of Milford decide to leave MACC Base and initiate its own dispatch center, the Town Manager and Public Safety Chiefs should meet with their colleagues from Wilton, Mont Vernon, and Lyndeborough to offer them the dispatching services of the Town of Milford Police Department. Consideration should also be given to offering dispatching services to other nearby - preferably contiguous - towns as well.

### **Recommendation XII-3:**

Any town that may seek dispatching services from a new Milford communications center should work collaboratively with Milford and its own communications vendors to determine the appropriate types of equipment upgrades needed to fully integrate its system with Milford's system.

## **CHAPTER XIII - REGIONAL SERVICE GOVERNANCE**

### **Recommendation XIII-1:**

*Should the Town of Milford decide to offer dispatch services on a contract basis to other communities, an advisory operational board comprised of the Police and Fire Chiefs of each participating community should be created for the purpose of assisting with the development of standardized operational procedures used by the dispatch center. Consideration should also be given to separate Police and Fire subcommittees.*

## **CHAPTER XIV - FINANCIAL APPORTIONMENT**

### **Recommendation XIV-1:**

The Town of Milford should offer contract emergency dispatch and communications services to surrounding communities for a fee, based upon that community's percentage of the overall population served by the Milford Police Dispatch Center.

### **Recommendation XIV-2:**

To the extent possible, Milford should consider offering the same dispatch services under contract that MACC Base presently does. Also, to the extent possible, Milford should attempt, at least initially, to do this for the same cost other communities now pay. However, any infrastructure improvements necessary for the other towns should be done at their own expense as they will own and maintain their own systems.

### **Recommendation XIV-3:**

Once the new dispatch center is built at the Milford Police Department, the square footage of the dispatch area should be calculated to determine what percentage of the Police building it occupies. The cost of utilities should be estimated so that the dispatch center can be charged for a percentage share of the overall cost of the utilities, based on the percentage of the building it uses. This becomes important when, and if, Milford decides to offer dispatching services to other communities.

## **CHAPTER XV - OPERATIONS**

### **Recommendation XV-1:**

Should the Milford Police Department decide to offer dispatch services to other communities, once the dispatch center is ready to accept additional towns wanting to join, it is recommended that there be a minimum of 60 days between the times each town transitions into the center. This will allow sufficient time for technical glitches to be resolved.

## **XVII. TEAM PROFILES**

The following MRI staffed participated in this project:

### **Project Manager:**

**Brian P. Duggan** recently retired from the Fire Department in Northampton, Massachusetts, where he has instituted substantial changes to modernize and restructure the entire department including equipment, facilities, personnel, and training. In conjunction with his staff, Brian has created a regional Advanced Life Support Program that currently serves eighteen communities within the Northampton Area. He formerly commanded the Northborough, Massachusetts, Fire Department, and has significant experience with the Massachusetts Department of Fire Services where he held several key positions. Mr. Duggan developed and directed the Graduate and Undergraduate Fire Science Programs at Anna Maria College in Paxton Massachusetts from 1995 - 2003. Mr. Duggan has a Business Management/Fire Science degree from Providence College and a Master's Degree of Business Administration (MBA) from Nichols College in Dudley, Massachusetts. He is also a graduate of the National Fire Academy Executive Fire Officer Program and the Senior Executive Program for State and Local Leaders at Harvard University. In December 2012, Mr. Duggan received a Master's Degree in Homeland Security through the Naval Post Graduate School based in Monterey, California, where his thesis entitled "*Enhancing Decision-making during the First Operational Period of Surge Events*" was selected as an outstanding thesis. He is one of only a few fire service professionals to be designated as a Chief Fire Officer by the Commission on Fire Accreditation International. He leads the Massachusetts fire service through his affiliation as Chairman of the Fire Chief Association of Massachusetts Technology Committee and as a Regional Director on the Massachusetts State Fire Mobilization Committee. Mr. Duggan has authored several publications, inclusive of writing Section 7, Chapter 3, Fire Department Information Systems, in the Nineteenth and Twentieth Editions of the National Fire Protection Association's Fire Protection Handbook. Chief Duggan has served as a subject advisor to MRI since 2002.

### **Team Members:**

**Thomas E. Garrity** was the Project Manager for the Nashoba Valley Regional Emergency Dispatch Center Project. This project consisted of developing and implementing a 4 community regional dispatch center. Prior to this, Mr. Garrity served as Fire Chief/Director of Public Safety for Massachusetts Development - Devens for 13 years, where he directed all public safety operations which included the delivery of fire, emergency medical, 911 emergency dispatch, and supervision of the Massachusetts State Police contingent that was assigned to Devens as its Police Force. During his tenure, he administered an annual operating budget of \$2.5M.Mr.

Garrity also served 29 years with the Hudson, Massachusetts, Fire Department starting as a firefighter, mechanic and eventually serving as Fire Chief/Emergency manager for 12 years. Mr. Garrity served as a consultant at the Massachusetts Fire Fighting Academy, as President of the Massachusetts Fire Chiefs Association, and as a member of the Board of directors for over 10 years. Mr. Garrity served as a member of the Fire Service Commission, Chairman of the Hazardous Materials Policy Board for the State regional hazardous material response teams; as a member of the State Emergency Response Committee as Representative of the Fire Chiefs of Massachusetts for 8 years; and as a member of the North East Regional Code Committee. Mr. Garrity holds a Bachelor of Science in Fire Science from Anna Maria College and an Associate's Degree in Fire Science from Quinsigamond Community College. He is affiliated with many professional associations, including the New England Fire Chiefs Association, the Massachusetts Fire Chiefs Association, the New York Fire Chiefs Association, and the International Association of Fire Chiefs. Mr. Garrity serves as a subject advisor to MRI and will occasionally work on a project team.

**Peter J. Finley, Jr.** most recently served as Chief of the Winslow Township Fire Department in New Jersey, where he was responsible for the planning, establishment, and initial deployment of the career component of the department. He previously served for 4 ½ years as the Chief of Department for the City of Vineland, New Jersey Fire Department where he initiated significant changes within the department including updating and modernizing equipment, providing the department's first ever formal officer training, and significantly increasing the capabilities of the regional hazardous materials response team. During his tenure the department received more than one million dollars in various grants. He formerly commanded the Vineland Rescue Squad gaining significant EMS operations and command experience, as well as completing an overhaul of that organization's operations. Chief Finley serves as an Adjunct Professor in the Fire Science Program at Camden County College. Chief Finley received his Associate in Applied Science degree from Atlantic Community College in New Jersey, and earned his Bachelor of Science degree in Fire Science/Administration from the University of Maryland. He is a graduate of the National Fire Academy's Executive Fire Officer Program, earning perfect scores on three of his four Applied Research Projects. He was awarded an Outstanding Research Award for his 2002 paper titled, "Residential Fire Alarm Systems: The Verification and Response Dilemma". Chief Finley holds nearly two dozen state and national certifications and is a member of a number of fire service organizations, including achieving the prestigious Chief Fire Officer designation from the Commission on Fire Accreditation International. He is a member of a number of fire service organizations and is currently serving as President of the New Jersey Career Fire Chiefs Association where he has been involved in the development and administration of fire service promotional examinations. From 2003–2005 he served on the Training and Education Committee of the Governor's Fire Service and Safety Task Force. He also previously served on the state committee that developed New Jersey's first Firefighter I Instructor Manual.

## **XVIII. CONCLUSION**

Our analysis of the proposed Milford Police Department Dispatch Center leads us to the conclusion that overall this will be a beneficial endeavor for the Town of Milford. The Center would initially be equipped with three (3) fully-functional dispatch consoles, with the capacity for an additional one. The new dispatch center will be fully outfitted with the latest state of the art equipment and technology for its operations.

All of the existing MACC Base dispatchers appear to be well trained and experienced; they should be offered positions first in the new center.

In 2018, Milford's cost for receiving dispatch services from MACC Base is \$489,719.49. This is a reduction of about \$17,563.00 since 2016. However, as has been noted throughout this report, MACC Base is in need of significant infrastructure and technology upgrades. It is estimated that MACC Base would need financing of about \$1,700,000.00 to be able to complete the necessary upgrades, keeping in mind that MACC Base cannot obtain financing on its own. Interest on bonds to finance the improvements are estimated at \$535,500.00 over 20 years, bringing the total cost to \$2,235,500.00.

If the MACC BOG were to get approval for the improvements to be funded at the same percentage as the annual operating budget, which is unlikely, Milford's 71% share of the upgrade cost would total \$1,593,722.90, or about \$79,688.64 per year. This would increase Milford's annual contribution to MACC Base to about \$569,408.00. Despite contributing nearly \$1,600,000.00 to this project over 20 years, Milford would still not fully own or have control of the equipment.

Equally unlikely is the MACC BOG agreeing to have each of the three main participants - Milford, Wilton, and Mont Vernon - split the cost of the infrastructure and technology upgrades equally since they would benefit equally from the improved communications available to their personnel. Under this scenario, over the 20-year life of the bond, each town would end up contributing \$745,166.68, or \$37,258.33 annually. Using this formula, Milford's annual contribution would increase to about \$526,977.82.

As has been previously noted in this report, MACC cannot obtain the necessary financing on its own. Since Milford is, by far, the largest member, it probably has the most borrowing capacity and would be best positioned to obtain the necessary financing on behalf of MACC Base. However, assuming this debt would have at least some impact on Milford's own capacity to borrow money to finance its own needs. In addition, although it is anticipated that the other towns would be required to sign a 20-year agreement to pay their share even if they leave MACC Base, there is still the possibility that a community could default on its obligation, leaving Milford on the hook. Finally, in 20 years - or less with the rate technology is improving - MACC

Base would be looking at the same issues of needing to upgrade obsolete equipment and the process would start all over again.

The estimated cost for Milford to operate its own center is between \$547,446.00, an increase of about \$57,726.51 (11.8%), to \$610,141.00, an increase of \$120,421.51 (24.6%) over current year costs. The cost difference depends upon the staffing model that Milford decides to implement. In addition, we estimate the town would need about \$1,750,000.00 in capital funding for the purchase of necessary communications and radio equipment and construction of the new dispatch center. Milford has provided estimates of funding needs being somewhat higher at around \$2,000,000.00.

In the interest of leaning toward estimates that may be a little higher, rather than estimating too low, the higher figure was used. Interest on a 20-year bond of \$2,000,000.00 is estimated to be around \$630,000.00, or \$31,500.00 per year. The total annual cost of that debt service would be \$131,500.00. This would make the annual overall cost for Milford to operate its own dispatch center between about \$678,946.00 and \$741,641.00, depending upon the staffing model selected.

**Figure 48: Cost Estimates/Comparisons**

<b>CURRENT MILFORD MACC BASE COST</b>		<b>\$489,719.49</b>
<b>ANNUAL MILFORD DEBT SERVICE COST @ 71% OF INFRASTRUCTURE UPGRADE</b>	<b>\$79,688.64</b>	
<b>TOTAL ANNUAL MILFORD COST @ 71% OF INFRASTRUCTURE UPGRADE</b>		<b>\$569,407.64</b>
<b>ANNUAL MILFORD DEBT SERVICE COST @ 33.3% OF INFRASTRUCTURE UPGRADE</b>	<b>\$37,258.33</b>	
<b>TOTAL ANNUAL MILFORD COST @ 33.3% OF INFRASTRUCTURE UPGRADE</b>		<b>\$526,977.82</b>
<b>ESTIMATED MILFORD POLICE DISPATCH CENTER OPERATING COST WITH 2 DISPATCHERS 16/7</b>	<b>\$547,446.00</b>	
<b>ANNUAL MILFORD DEBT SERVICE FOR MILFORD POLICE DISPATCH CENTER INFRASTRUCTURE UPGRADE COST</b>	<b>\$131,500.00</b>	
<b>TOTAL ANNUAL MILFORD POLICE DISPATCH CENTER COST</b>		<b>\$678,945.00</b>
<b>ESTIMATED MILFORD POLICE DISPATCH CENTER OPERATING COST WITH 2 DISPATCHERS 24/7</b>	<b>\$610,141.00</b>	
<b>ANNUAL MILFORD DEBT SERVICE FOR MILFORD POLICE DISPATCH CENTER INFRASTRUCTURE UPGRADE COST</b>	<b>\$131,500.00</b>	
<b>TOTAL ANNUAL MILFORD POLICE DISPATCH CENTER COST</b>		<b>\$741,641.00</b>

While these costs are not insignificant, we believe the benefits to Milford justify the expense. MACC Base's infrastructure is old and technologically obsolete. However, the MACC participants are unable to reach an agreement on how to fund the necessary upgrades, and we do not see that happening in the foreseeable future. Even if the BOG can reach an agreement, MACC Base cannot borrow money on its own, so as the largest participant, Milford would most likely be looked at to obtain the necessary financing. Even though the town would be liable for repaying the financing and have the risk of another participant defaulting on their obligation, they would not fully own the equipment for which they are paying. It is clear that not all of the MACC Base participants have the same perspectives or priorities as Milford. In addition, from an operational perspective, Milford utilizes 75% of MACC Base services but has only 33% of the vote on operational issues and 50% of the vote on fiscal issues.

The MRI study team sees the following advantages to Milford pursuing this endeavor, even with the increased costs the town will likely incur.

- Five (5) antenna/tower sites located within the town itself, two (2) of which will be additional sites
- State of the art, technologically up-to-date, radios and equipment in a brand-new dispatch center
- Significantly improved communications for all town emergency services and other town departments and services
- 100% ownership of the equipment the town is financing
- Capability to borrow/bond for funds; MACC Base does not (Milford would most likely need to obtain financing on behalf of MACC Base.)
- No possibility that another participant will default on bond repayment terms
- Placement of funds into a capital reserve account for future system repairs and upgrades; MACC Base cannot
- Full control over dispatch operations rather than a 33% operational vote
- "Dark" police station will be eliminated with station now staffed 24/7
- Easier citizen access to Milford Police if they need assistance after normal business hours
- Sufficient capacity to offer service to several additional municipalities needing additional infrastructure or staffing, while simultaneously lowering Milford's overall costs
- Capacity to expand from three (3) fully-functional dispatch consoles to four (4)

We believe that Milford should also give serious consideration to offering dispatch services, under contract, to other nearby communities, including current participants in MACC Base, as well as any others who might be interested. This will allow these communities to receive the benefits of Milford's state-of-the-art system, while Milford would still retain operational control. The revenue generated from any communities that Milford provides service to would



serve to offset the annual operating costs, as well as possibly assist with paying down the capital debt incurred for construction of the new system.

From the perspective of taking on additional communities, if even just Wilton were to join with Milford for its dispatching services and paid the same amount it is paying to MACC Base, the town would receive revenue of about \$119,133.00. Based upon the lower cost estimate for Milford's dispatch center, this revenue offset would decrease Milford's cost to about \$559,812.00, \$70,093.00 (14.3%) more than the town is contributing to MACC Base this year. If Mont Vernon (\$78,051.00) and Lyndeborough (\$20,818.00) also were to contract with Milford to provide service and did so at the current rate, Milford's annual cost would be below what it now pays to MACC Base. Even at the higher end of the Milford operating expenses, revenue just from Wilton would reduce Milford's cost to about \$622,508.00, \$132,789.00 more than the 2018 MACC Base contribution. Mont Vernon and Lyndeborough would further reduce this increase as well. It is our belief that Milford would be able to take on several additional communities, depending upon size, without the need to increase on duty staffing, and thus personnel costs. The net result would be increased cost savings for Milford.

As we stated earlier in this report, we believe that any town that is planning to possibly utilize Milford to provide dispatch services should invest in upgrading its own town emergency communications systems as part of the process of establishing connectivity with Milford. This will also allow the communities to build necessary redundancy into the overall emergency communication systems. That recommendation notwithstanding, the possibility of Milford serving as a regional communications center is highly feasible.

Obviously, it is important to remember that, whenever possible, the level of service received by the taxpayers/stakeholders should not be diminished when considering significant changes in how operations are conducted. The MRI study team feels very confident that the level of service that will be offered by the Milford Police Department Dispatch Center will be at least on a par with the current level of service offered by MACC Base. The acquisition of new technologically up-to-date radios and communications equipment will serve to provide an enhanced level of service to the town, its citizens, and its emergency responders.

It is important that any community seeking service from the new Milford Communications Center understand that they are a customer and not a voting participant. Milford will be the authority, with full control and authority over the dispatch center. Any other communities wanting to have Milford dispatch for them will contract with Milford to provide the service and will be clients or customers. Nonetheless, these communities may be major stakeholders in the dispatch operation. One of the primary reasons that regional endeavors fail is that one or more of the participants perceive, whether real or imagined, that they lack a real voice or control in how the system works or operates. As a result, the towns that are contracting for service will need at least some level of input in the operations of the center. If the recommended advisory board is created and comprised of representatives of all participating communities and

departments, it is important that it meets on a regular basis, and that suggestions and recommendations made by a consensus of the group are given appropriate consideration. This is an area that any potential client of Milford should fully vet prior to making a final decision about joining Milford's dispatch. It is very important that each town's Police Chief, Fire Chief and EMS Director be satisfied, based upon an objective evaluation and not pre-conceived bias or general opposition, with the services they receive from Milford and that transferring dispatch operation will meet their needs and the needs of their personnel.

Throughout this process, Milford, and eventually each municipality that may be contracting with the town for service, and each emergency services department, will need to develop specific, detailed plans for making the transition to the new dispatch center. These plans must include backup and contingency plans should unexpected hardware or software issues occur during the transition. Other issues that will need to be planned for include, but certainly are not limited to: training needs and related staffing challenges; hiring the dispatch center staff while trying to keep MACC Base operational during the transition period; determining detailed equipment, hardware, and software needs; construction of the new dispatch facility; establishing time lines for installation of new equipment, hardware, and software at various locations; and ensuring that all equipment and processes are fully tested and operational prior to coming on line for emergency operations. As is recommended elsewhere in this report, if Milford decides to provide dispatch services to additional municipalities, it is strongly recommended that the participants come on board incrementally, adding each additional town in no less than 60-day intervals.