



TOWN OF FALMOUTH, MA

**FACILITY AND COMPUTER AIDED
DISPATCH ASSESSMENT**

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INTRODUCTION

It has been a pleasure working with the Emergency Communication personnel that represent the Town of Falmouth. It is clear that you are continually striving to provide the citizens of the Falmouth with a higher level of service in the most efficient way possible.

With the concept of consolidating the dispatch operations of the Police and Fire Rescue Departments, IXP was engaged to conduct an assessment and provide recommendations for two separate but related areas. The first is a review and assessment of potential locations, located within the respective department headquarters buildings, for the Falmouth Police Department and the Falmouth Fire Rescue Department call taking and dispatch operations. The second area is an assessment of the existing Computer Aided Dispatch (CAD) systems in use at the Falmouth Police Department and the Falmouth Fire Rescue Department. The assessment includes recommendations for an approach to consolidating dispatch operations to a single CAD system.

Although this assessment was conducted with an eye toward the potential opportunities and benefits of consolidation of the two agencies' emergency communications operations, the scope was limited to the review and evaluation of the current facilities and existing CAD systems. IXP was not directed to examine the ramifications of a consolidation as it pertains to the governance, operations and other facets of technology other than CAD. The data sources for the assessment include survey materials as compiled during interviews with the agencies, both onsite and through additional research.

EXECUTIVE SUMMARY

The concept of providing emergency dispatch services more efficiently and effectively is a goal of many jurisdictions across the country. Public safety agencies of all sizes throughout the State of Massachusetts are being tasked with providing these services against the backdrop of tighter budgets, increasing operational demands and maturing technology. It is for these reasons that the Town of Falmouth engaged IXP Corporation to specifically assess both current dispatch locations being utilized by Falmouth Police and Falmouth Fire Rescue as well as evaluate the individual CAD systems currently in use by each department.

The Facility assessment highlights the advantages and disadvantages of both locations, while the CAD assessment analyzes whether either of the current CAD systems can be utilized within the parameters of consolidation or if a new system should be purchased. The following sections summarize the results of both areas of this assessment:

FACILITY ASSESSMENT SUMMARY

IXP conducted an in-depth site assessment and review of the existing dispatch facilities of both Falmouth Police and Fire Rescue. This assessment was comprised of a physical site review of both facilities as well as in-depth interviews of the Police and Fire Rescue departments' ranking officials, operational staff, and Chief Deputy of Technical Services for the Barnstable Sheriff Department.

The assessment was confined to the evaluation of both current dispatch environments, each with one probable relocation area within its existing facility. For Police Headquarters, the lower level area was examined and for Fire Rescue, the third floor was examined. Regardless of which site is selected, it is essential that dispatch operations are situated in an area with restricted access and limited interruption from normal day to day operations from the rest of the building.

After reviewing the report created for the Town of Falmouth by Matrix Consulting Group, dated 12/2014, we are in concurrence that a consolidated communications center requires approximately 1540 square feet to accommodate four console positions as well as administration, breakroom, locker, kitchen area and training space. Either potential relocation site will require significant internal modifications to accomplish this goal. Although both buildings can accommodate this

total square foot space allocation, the floor layout/configuration for Fire Rescue Headquarters is extremely problematic due to the triangular shape of the space, as well as the secondary egress stairwell which divides the entire rear section of the floor. It is our understanding that this stairwell is a building code requirement and cannot be altered. Any refurbishment within Fire Rescue Headquarters also requires a locker room/breakroom and kitchen area designated adjacent to the current EOC/Community Room on the 2nd floor due to a lack of space on the 3rd floor.

Although this third floor space does have elevator access, which is a positive from an ADA compliance standpoint, the triangular shaped layout make a consolidated communications center layout impractical. The vibration and noise levels which come from the equipment room located within this space is also an unfavorable factor if relocation to this area is chosen.

Police Headquarters has more contiguous space at the lower level and the majority of dispatch operations functions can be relocated within this lower level space. Only training would need to be located on the main floor. All other functions of dispatch operations, including breakroom/locker room/kitchen area can co-exist within the renovated lower level area. Although this building will allow for a separate entrance area, it needs to be made ADA compliant.

The advantages and disadvantages of both the Police and Fire Rescue facilities have been detailed within the applicable sections of this report with the advantages and disadvantages of both locations being noted. It is however the opinion of IXP that the lower level of Police Headquarters is the more suitable option due to the overall restrictive nature of the 3rd floor space at Fire Rescue Headquarters.

CAD ASSESSMENT SUMMARY

Dispatch centers require effective software tools and technology in order to operate efficiently and cost-effectively. The Town requested that IXP assess the current CAD environment and determine the following:

- Whether either existing CAD system could be utilized in the consolidated communications center that is planned, or if a new CAD system must be purchased.
- Whether a shared CAD system should be used in a single location housing both Police and Fire, or the shared CAD system should be used in two separate locations.
- The recommended approach and the steps to move forward in implementing a CAD system that meets the multi-agency needs of the Town today and in the future.

To determine the answers to these questions, IXP met with personnel at the Police and Fire departments as well as Information Technology personnel. We observed the operations of both existing dispatch centers and solicited information from dispatch personnel. After careful consideration of the information gathered, we developed conclusions for each question and a plan that will guide the Town on a path to implementation.

At this stage, neither existing CAD system meets the needs of the Town. The Fire Department's CAD system is antiquated, obsolete, and unsupported. The Police Department's TriTech Perform CAD system may be a candidate for combined usage, but there are serious performance and functionality issues currently that must be resolved before it can be considered. IXP recommends that those issues be addressed with the vendor to determine whether to move forward with the CAD system. Whether it is chosen as the future CAD system or not, it will be in place until consolidation is completed and should be functioning properly.

IXP recommends that the Town of Falmouth follow a plan that includes carefully documenting the software functional requirements and then presenting those to a few listed companies to get their responses to the requirements and budgetary quotes. Each company should be brought in to demonstrate how their software meets the needs of the Town. If an acceptable CAD is not found, the Town should open up the process by pursuing a full procurement process.

The benefits of a shared CAD system are greatest when the dispatch operation is combined into a single location. The dispatchers can be cross-trained in Police and Fire procedures and back each other up during breaks and busy periods. A single training program must be developed and maintained, and less experienced dispatchers can be paired with experienced personnel during the training period. A single administrator is required to manage the operation. Combined with the lower costs associated with a single CAD and ancillary systems rather than two, a consolidated communications center with a combined CAD is the only logical solution. IXP has provided detailed steps in this assessment to assist the Town in moving forward with selection and implementation of the appropriate CAD system in a consolidated communications center.

We would be remiss if we did not take this opportunity to express our appreciation to all the members of your Emergency Communication community who supported this effort and supplied all the requested information in a timely and forthright manner. Police, Fire and Sheriff IT personnel made themselves available to meet, review and discuss the issues that affect your community with a goal of making the situation better.

FACILITY ASSESSMENT

The following are the design and planning objectives as provided by the Town of Falmouth and were taken into consideration during the facility assessment. While a number of these objectives can only be addressed during the design and construction phase, the ability to ultimately provide the requirements during construction were considered during the evaluation of each site.

- Consolidate and upgrade the existing communication centers for Police and Fire Rescue.
- Develop a facility that will adequately support communications staff from both organizations.
- Incorporate state-of-the art public safety, communications, computer, and emergency management systems.
- Provide shared and multi-use spaces for training and emergency operations.
- Provide a safe, secure working environment with optimum adjacencies, effective building hardening and security and ergonomically correct work stations.
- An ADA compliant facility which considers aisle spacing, access ramping, electronically opening doors to the facility, and handicapped parking.
- Provide a work environment that is acoustically sound absorbent, flexible to light and HVAC conditions with adequate break and locker rooms to accommodate the increase in staffing.
- Provide secure communications staff parking separate from public and visitor parking.
- A card access control system that enhances the separation of the communications operations from the regular operation for either Police or Fire operations which will be taking place within the same facility.



Existing PD Dispatch Operations

IXP was instructed to evaluate two specific locations; the Falmouth Police Department Headquarters building and the Falmouth Fire Department Headquarters building. Inspections were conducted at both locations where IXP considered all available spaces within each building. The details of these inspections follows.

FALMOUTH POLICE DEPARTMENT HEADQUARTERS

The communication center for the Falmouth Police Department is located within the department headquarters building at 750 Main Street in Falmouth, Massachusetts. Chief Dunne and his staff were made available to conduct a detailed tour of the building and all associated technical applications and interfaces. Interviews were conducted with Police Department ranking officers, operations staff, personnel from the Department of Public Works (DPW), and the Barnstable Sheriff Department Computer Operations Manager. This walk-thru and subsequent discussions enabled the IXP team to complete the following tasks:

- Complete an onsite inspection of the current facility for functional soundness and preparedness;
- Inspection of the emergency generator;
- Inspection of the radio tower;
- Inspection of the facility and surrounding grounds for any potential safety and security issues pertaining to access and adequate camera coverage;
- Analyze the square footage of the entire facility and current use in order to determine if the lower level areas are suitable for relocation of not only dispatch operation but associated functions; and
- Confirm the approximate square footage needs for consolidation.

This two level building houses all Police administrative and communication personnel. The communication area is manned by two staffers at all times, a civilian dispatcher and a uniformed officer. The one uniformed officer is primarily responsible for front-desk duty.



PD Lower Level Area

In general, the review of the potential location of a consolidated communications center for Police and Fire was limited to the lower level of the existing Police Headquarters. There is not enough area for expansion at the existing dispatch location on the first floor of this building. It is understood that any consolidated communications center would be based on the need for four dispatch positions with adjacent space requirements for administration, storage, training, breakroom as well as restrooms and lockers. From an operations standpoint, it is beneficial for this space to be contiguous, however it is not essential. For this consolidation effort to be successful, the separation of dispatch operations and any existing ongoing Police operations is recommended.

As a result of this assessment, it is apparent that Police Headquarters can be converted to house a consolidated communications center. This segmented location has many advantages, however renovation is required. The estimation of cost for future renovations were not within the scope of this assessment. The following listing will outline some of the more pertinent observations and issues.

ADVANTAGES

- No general building issues at it relates to potential water damage. Building is located approximately 1 mile from the coastline.
- Building generator is a Caterpillar Model D125/6 Diesel Package/Gen Set rated @ 125 kw and is adequate to back-up the entire building. This generator is fueled by a natural gas supply through underground piping.
- There are currently no security issues; however, the effects of any future relocation of personnel would need to be addressed since the side entrance to the facility would now be of primary importance.
- Parking Space availability is not an issue for increased operations staffing.
- VLAN connectivity through a fiber network with a 144 pair trunk.
- Relocation to the lower level area would allow for not only a separate entrance for dispatch personnel but all of communications could be housed in a large contiguous space.
- Adequate space to house dispatch administration, dispatch operations, storage, restrooms, lockers and breakroom. Although the room would need to be remodeled, the current total square footage of the various rooms within this lower level area is approximately 1400 square feet.
- The Police Training Room (located on the main level) can continue to be utilized for this function within the consolidated communications center. This area is approximately 960 square feet.
- Possible relocation of a kitchen and breakroom area (to the rear of the space) may be required in order to establish proper work flow within the dispatch operations.
- Utilizing both the lower level area and the Police Training Room will satisfy the needs of this consolidated communications center.
- Separate HVAC zoning within this lower level area currently exists.



PD Building Generator

- Lighting from the outside is minimal and acceptable. Acoustics must be addressed from a floor and ceiling perspective.

DISADVANTAGES

- No central building UPS. All dispatch consoles are protected by individual UPS units. During the technology and facility planning and design phases the UPS requirements will need to be thoroughly evaluated.
- From an operations standpoint, if dispatch was to be relocated to the lower level, front desk coverage will need to be addressed.
- ADA compliance will need to be re-examined. The current side entrance can be made into the primary access point for the consolidated communications center but it is not currently ADA compliant.
- Although there is currently no Wi-Fi within the facility, it is planned to be installed within the next several months.

FALMOUTH FIRE RESCUE DEPARTMENT

The communication center for the Falmouth Fire Rescue Department is located within the department headquarters building located at 399 Main Street in Falmouth, Massachusetts. There is currently one on-duty dispatcher at all times. The role of this position is multi-functional and is defined further within the CAD section of the assessment. The Fire Rescue Headquarters is a three story structure which has since been expanded and renovated making it odd in its configuration but functional none the less.

In Chief Sullivan's absence, Deputy Chief T. Smith and Deputy Chief M. Small were available to support the interview and facility review process. The walk-thru and subsequent discussions enabled the IXP team to complete the following tasks:

- Complete an onsite inspection of the current facility for functional soundness and preparedness;
- Inspection of the emergency generator;
- Inspection of the radio tower;
- Inspection of the facility and surrounding grounds for any potential safety and security issues pertaining to access and adequate camera coverage;
- Analyze the total available square footage of the entire facility in order to determine if the available area on the 3rd floor of the premises is acceptable; and
- Confirm the approximate square footage needs for consolidation.



FD Existing Dispatch Area

In general, the review of the potential relocation of a consolidated communications center for Police and Fire was confined to the 3rd floor exercise area at Fire Rescue Headquarters. There is not enough area for expansion at the current dispatch location on the first floor of this building. As previously mentioned, the consolidated communications center requires approximately 1540 square feet for dispatch communication and associated areas. Since the community room currently serves as the towns EOC, no modifications for this requirement are necessary. However, locker rooms and a breakroom/kitchen area remain a requirement of a consolidated communications center and would need to be satisfied within the parameters of the 3rd floor. Although the total available area of the space on the 3rd floor satisfies the overall space requirement (at approx. 1400 square feet), the shape and configuration make this area extremely limited and less than desirable.

As a result of this assessment, it is apparent that although the Fire Rescue Headquarters meets the overall square footage requirement, the 3rd floor space is an extreme challenge for a suitable work flow and proper adjacencies. The following listing outlines some of the more pertinent observations noted through this review.



Potential 3rd Floor Relocation/Stairwell for 2nd Floor Access Point

ADVANTAGES

- Building was refurbished in 2003.
- Building is ADA compliant with a working elevator that services all 3 floors.
- The side entrance of the facility can be utilized as the primary entrance for dispatch operations. The elevator within this lobby can be configured to allow for 3rd floor access for dispatch personnel therefore limiting any disruptions to the current Fire Rescue operation.
- No general building issues as it pertains to water at the ground level. This facility is also located approximately 1 mile from the coastline (see comment below regarding roof leak).
- Building generator is currently housed adjacent to the radio tower in a secure location. This is a Caterpillar 200 kw/3 phase/120 kW unit which can back up the entire facility.
- Diesel fuel is supplied to this generator via an underground 500 gallon double walled fuel tank.
- Radio tower is 120 ft. high, in good working order, enclosed with perimeter security fencing.
- Radio UPS is housed within the Radio Shelter and is a 6000 watt unit. Various building hardware are backed by a separate 3000 watt UPS unit within the facility and the dispatch console utilizes a stand-alone UPS unit.
- Town personnel attested to the adequacy of building conduits and associated cabling.
- Access to outside patios.



FD Radio Tower/Shelter and Diesel

DISADVANTAGES

- Parking is currently an issue. It was noted by Town personnel that the residential building which is adjacent to this facility has been purchased by the Town and scheduled for demolition. This property will become a paved parking lot. When this occurs, this situation will be remedied.
- The dispatch consoles is protected by individual UPS unit
- Building Security: This facility is a much more open environment due to the nature of Fire equipment being dispatched. With increased foot traffic, the overall camera coverage needs to be re-analyzed.

- Within the communication closet there is an existing roof leak which appears to be originating from the 3rd floor patio area. Building personnel are aware of this current condition since an existing equipment rack has been covered in heavy gauge plastic as a temporary remedy.
- The 3rd floor exercise area is adequate from a square footage perspective to house the dispatch area but its layout is very problematic. The triangular shapes will be a challenge when a floor layout is drafted since ADA aisle compliance must prevail.
- The 3rd floor area is susceptible to excessive vibration and noise that is coming from equipment located within the Boiler Room. Also, any floor design needs to allow for adequate access to the Boiler Room to allow for servicing or replacement of the existing equipment in the room.
- The 3rd floor area would need to accommodate dispatch administration, dispatch operations, breakroom and restrooms/locker rooms. This would be very challenging from a design standpoint due to the triangular shape of the 3rd floor.
- It is our understanding that the Community Room doubles as an EOC area (approx. 400 sq. ft.). This room, as well as the adjacent kitchen area, is in frequent use by the community and therefore may not be suitable for permanent modification.
- The existing restrooms have showers but no locker area. An area for lockers needs to be included in the needs analysis and any subsequent design.
- This 3rd floor area does not currently have a separate HVAC zone and requires modification.
- Excessive outside lighting will need to be addressed since the current condition is not suitable for a dispatch environment.



3rd Floor Communications Room Roof Leak

FALMOUTH POLICE AND FIRE RESCUE RADIO COMMUNICATION OVERVIEW

The Town of Falmouth's existing radio system was discussed in general with the Barnstable Sheriff's Chief Deputy of Technical Services who provided an overview of the system and its associated interfaces. This remote interview took place in order to determine if the current condition of the systems is a determining factor regarding site selection. Currently the Falmouth Police and Fire Department operate separate emergency dispatch operations and radio systems.



FD Radio Tower

IXP was able to provide a basic assessment of emergency radio communication systems in Falmouth based on information supplied by Chief Deputy Ralph Swenson of the Barnstable County Sheriff's Department as well as additional information obtained from the FCC data base.

The Fire Department is assigned a talk group on the Massachusetts State Police state wide trunked radio system. They also still maintain their legacy low band radio system as a backup. The Police Department operate a conventional 800 MHZ repeater system with multiple satellite receiver sites located around town. These receiver sites are all connected back to the Police Department over leased RTNA phone lines. The repeater site is also connected over leased lines to the dispatch center. Although the Police Department does not use the state wide network, they do have a talk group assigned to them and programmed into their radios for interoperability and back up. They also, like the Fire Department, maintain their legacy VHF radio system as back up.

The list below, which was provided by Chief Deputy Swanson, shows the wireless communication systems used by the Town.

- Wireless Fire Alarm System

- Main and Stand-by Low Band Fire Dispatch Bases
- VHF FD “742” Base
- DPW Base
- Water Department Base
- Wireless Data Network
- Fire 800 MHz Channels (Main and County);
- Police 800 MHz Channels (County, Main and Back-Up);
- VHF Police Base

These communication systems and antennas are located on 2 towers, each next to the Falmouth Fire and Police Departments. If the dispatch centers are going to be consolidated to a single location, a full onsite assessment of these systems is recommended to determine the best course of action for integration of the radio systems to a consolidated communications center.

The condition or presence of a functional tower adjacent to a building is not the determining factor in the choice of location for a new consolidated facility. Currently, both Fire and Police broadcast to remote tower sites utilizing RF and wireline control stations, which do not require any antenna tower elevation. The remaining radio resources at the existing tower can be connected remotely to any chosen site using various technologies such as microwave, fiber network or radio frequency. Current short haul microwave technologies are such that they are significantly smaller in form factor than with previous versions of this technology. These technologies are considered state of the art and included in current best practices. Based on the information provided, it appears utilizing the better of the two existing towers is the most cost effective solution.

FACILITY ASSESSMENT CONCLUSION

In order to effectively consolidate the Falmouth Police and Fire Rescue dispatch operation, relocation to a single facility is optimum. However, as previously stated, any consolidated communications center needs to be as separate as possible from the day to day functions at either Police or Fire Rescue Headquarters. This is to minimize any adjustments or conflicts which typically occur in this type of consolidation. The lower level at Police Headquarters is more conducive to achieving this separation. Although both facilities will require substantial renovation, Police Headquarters allows much more flexibility as it pertains to a communication floor layout and required adjacent functional space planning. IXP is ready to support the Town of Falmouth in any way possible in order to insure that the planning and operational aspects of this project are prioritized and effectively implemented.

COMPUTER AIDED DISPATCH

The Police and Fire departments in Falmouth each have their own dispatch centers supported by their own CAD systems. The Town asked IXP to study the current CAD systems and determine:

- Whether either existing CAD system could be utilized in the consolidated communications center that is planned, or if a new CAD system must be purchased.
- Whether a shared CAD system should be used in a single location housing both Police and Fire, or the shared CAD system should be used in two separate locations.
- The recommended approach and the steps to move forward in implementing a CAD system that meets the multi-agency needs of the Town today and in the future.

POLICE CAD SYSTEM

To understand and evaluate the existing Police CAD system, the following personnel were interviewed:

- Chief Dunn, Captain Smith, Sgt. Jamie Karl, and Brian Reid regarding fitness of the existing TriTech Perform CAD system;
- Tom Pucci and Greg Pucci, Information Technology support, regarding any systems issues with the CAD system; and
- Dispatcher and officers while observing operations.

FINDINGS

The Police Department uses TriTech Perform CAD. The system is under a support contract with the vendor and is updated approximately twice per year. As it is currently installed, the system does not include Fire dispatch capabilities, however a Fire module is offered by TriTech that can be purchased to provide that functionality.

The Police Department has the following units:

- 11 marked cruisers—all Ford Interceptor sedans (only 10 have mobile PCs)
- 1 marked Interceptor crossover/SUV (with mobile PC)
- 1 marked Ford F-250 (no mobile PC)
- 1 marked Ford Expedition (no mobile PC)
- 2 marked Harley Davidson motorcycles (no mobile PCs/tablets)
- 1 marked SWAT GMC delivery type van (no mobile PC)
- 2 unmarked Ford Taurus sedans (no mobile PCs)
- 1 unmarked Ford Fusion (no mobile PC)
- 5 unmarked Ford Crown Victorias (no mobile PCs)

There is a single civilian Police dispatcher on duty at all times. A police officer is also assigned to the desk.

Police Department personnel reported the following issues with the CAD system:

- The main issues officers have experienced with the TriTech Perform system are in the Field Based Reporting mobile capabilities. When units lose connectivity, the software does not properly handle the drop. If an officer is in the middle of completing a report when connectivity drops, the officer must shut down the mobile tablet and reconnect. The report the officer was working on may be locked and a cumbersome process is required to restore access to it. At times, data that was entered before the signal dropped is lost. For this reason, most officers only use the mobile units to do quick, simple tasks such as tickets and chatting. Officers enter reports in the station which reduces their time on the street.

- If password/permissions are changed in-house, they will work in-house. But once the officer is back out on the road, the user can't login to update table files. The officer must get a different officer to login to the mobile, then the download will work and new password/permissions take effect.
- When a document such as a pdf file is attached to a report, there is no clear display showing that the attachment is there.
- Officers cannot see the list of pending calls on the mobiles. They would like to be able to notify dispatch that they can take calls near their location when they are available.
- Officers stated that changes are often made in the software that they are not aware will be happening. Field functionality changes suddenly and they just have to adjust. For instance, the identity candidate function suddenly changed so that the user has to choose the candidate more than once in the same screen. Even though a stored candidate was chosen, the functionality now forces that all fields be validated again. This is time-consuming and unnecessary.
- Officers indicated that the mobile software is limited and should be able to do all functions that can be done in the office. They would also like a Forms module that allows the reports to be customized to reflect the Town's needs and State's standard forms.
- Dispatchers must set up their profiles at the start of every shift. There is a capability to save profiles but it must be generalized.
- Alarms go off on every dispatch console up to a minute and a half apart.
- Dispatchers have to look at the 9-1-1 screen and copy information onto the CAD screen. The interface no longer works.
- Dispatchers indicated that the system slows down considerably once everyone logs in. They said that the system is so slow that they are forced to go to cards at least twice per week.
- The dispatchers are told to reboot to clear slowness and 'refresh' the data on the screens. Sometimes they reboot three or four times before the problem is corrected.
- The link to the State system goes down and must be reset a few times per week.
- The identity merge does not appear to work correctly. Duplicate names show up as 'aliases' in a list of candidates, but real aliases do not show up at all.
- The display of the involved persons list is not helpful. It should show how the person is involved such as 'passenger', 'victim', 'witness.' Currently, the user must drill down into the list to determine each person's involvement.
- Dispatchers stated that there is no good way to put a unit out of service.

Information Technology personnel provided the following insights regarding CAD:

- There are issues with CAD mobile modems over the cellular network. The signal drops and they lose access. Must be shut down and restarted to connect.
- The Town uses GPS Tracker AVL but does not use GPS to recommend the closest unit to a call.
- Units use Motorola MW810.
- The Town is looking to get rugged tablets for cars and will be testing new Rhino tablets.
- The Town uses a private IP network over Verizon. Units are locked down with no internet access.
- Units have Sierra Wireless GX440. They don't use wireless, they use Aircards.
- The CAD Message Switch was having issues for about a 9 month period. It had to be shut down, left down for five minutes, and brought back up very frequently. Required 24 hour coverage but the problem has been corrected.
- CAD system uses Pervasive database (formerly btrieve).
- No punch list of software issues was available.
- The Sheriff's Department uses Tiburon CAD.
- IT would like to use VM and fiber between buildings.

- The fiber network is part of CapeNet. It connects VLAN for data, voice, all phone systems. 1.4 GHz between police and fire.
- PD Infrastructure:
 - Wiring needs replacement in Police Department. Currently it is CAT5—needs to be upgraded to CAT6.
 - Each station in PD has 1 phone line, 1 data line.
 - Data rack should be moved and should upgrade to 10 GB switches.

OBSERVATIONS

The existing TriTech Perform CAD, as configured, has performance issues particularly with slow response time. This causes the dispatchers to revert to entering incidents on cards on a fairly frequent basis. While the connectivity issues related to mobile computers are not a CAD issue per se, the software does not handle disconnects effectively. This results in time lost and loss of data. There are issues of functionality that officers and dispatchers report, and resolution of those issues would improve the usefulness of the system and the productivity of personnel.

As with any software, TriTech should be producing software release notes for any system updates, and distributing those to the customers. Planned changes and their ramifications should be communicated to the personnel using the system before updates to the software take place. Ideally, updates should be tested in a training environment prior to implementation. This would familiarize staff with the changes that are coming, identify problems in the software release, and prevent the ‘fix one problem—create five new ones’ cycle that can happen without testing.

Dispatchers and officers do not report many of the CAD issues they have because they do not believe that corrections will be made. Instead they learn to live with the new problems. A process for reporting issues and tracking resolution should be instituted. Dispatchers and officers should be made aware of actions being taken to correct problems, and will then be more likely to report issues. Software is designed to reduce workload and improve efficiency. Issues should be reported to the vendor and resolved quickly to get the most value from the Town’s investment.

FIRE CAD SYSTEM

In order to understand and evaluate the existing Fire CAD system, we interviewed the following personnel:

- Tom Pucci and Greg Pucci, Information Systems support, regarding any systems issues with the CAD system;
- Deputy Chief Timothy Smith regarding CAD software and operation; and
- Dispatcher Karen Metell regarding CAD usage and observed Fire Dispatch operations.

FINDINGS

The Fire Department has five firehouses and the following units:

- 6 Engines
- 1 Ladder
- 5 Ambulances
- 3 Forestry trucks
- 1 Heavy Rescue
- 2 Marine Units
- 1 Dive/Water rescue vehicle
- 11 Command/Fire Prevention/Staff/Utility vehicles.
- Additionally they have 1 ATV and several trailers (Haz-Mat, Mass Decon, a small inflatable boat, etc.) which are not equipped with radios.

The dispatch center is manned by a single civilian dispatcher.

Information Technology personnel provided the following insights regarding Fire CAD:

- The Fire Department uses an old Cobol CAD system that was developed by Tighe and Bond for the Town. It includes:
 - GIS functions.
 - Incident number assignment and logging.
 - Payroll entry to track overtime required when fire personnel are called in to work.
- No maintenance agreements are in force on software or hardware.
- The system interfaces to:
 - Zoll Ambulance Data Collection and Billing - Comdata
 - Fire RMS Top Gun
- Fire dispatch also monitors an old King-Fisher pull box alarm system that rings out the box #. System is DOS based and the software is on floppy disks.
- E9-1-1 used to feed to the CAD but no longer works even for land lines.
- Fire will be purchasing a new RMS system (probably Image Trend) to which the new CAD must interface.
- Fire has extra data racks, CAT5E cabling, plan to update switches to 10gb, plenty of outlets, two CAT5E's at every drop plus phone connection.

Deputy Chief Tim Smith advised the following:

- CAD was custom built by software vendor and GIS was wrapped around it.
- Fire does not have its own IT support. Depends on Town Hall IT staff.
- HP servers for Top Gun RMS are not supported.
- Looked at Tiburon as replacement system in 2013 and got pricing. Hosting is offered and Sheriff's Department uses Tiburon.
- Fire does not use paging—all spoken/radio communication.
- No Rip & Run printers.

Dispatcher Karen Metell provided the following information:

- Dispatcher monitors radio:
 - Ops channel
 - Non-emergency
 - Police
 - 800 frequency
 - Barnstable
- Dispatcher answers both emergency and non-emergency calls for:
 - Administrative lines
 - Fire Prevention
 - EMS Coordinator
 - Fire Alarm Technician
 - News Media (officer required)
 - Building Department
 - Other agencies
 - Also covers front window
- Sometimes the dispatcher is alone in the building if everyone is on a fire. Doors are open and anyone can walk in.
- Video cameras/monitors are old equipment that the Police Department didn't need. Many of the monitors no longer work and the ones that do are stuck on a single view.
- Calls are written down, dispatched, mutual aid requested, backfill stations with adequate personnel when people are out.

- The map requires too many steps to be useful. Dispatchers who know the town do not use it at all to locate calls. On the day that IXP was observing the map was not working. Dispatcher had notified GIS support to correct.
- Get information from 9-1-1 device for address because interface does not work.
- Must provide directions to the scene over the air for all units including mutual aid.
- The Collective Bargaining Agreement requires 10 personnel on duty for firefighting at all times. The Duty Officer may recall and hire back to ten throughout the shift. The Dispatcher prepares the related report for the Duty Officer.
- Used to be able to radio the DPW trucks. New trucks were purchased with no radios and now a central person radios/contacts the trucks.
- The dispatcher often gets non-emergency calls such as a citizen reporting that their smoke detector is going off. The dispatcher must find someone to talk with the person about replacing batteries. If the caller is elderly or infirm, someone may be sent to their home to assist.
- Dispatchers can't update important information in CAD such as changing a business name when a new business takes over or replacing a unit in a recommendation list. The dispatcher console is papered with sticky notes reminding personnel that a unit was decommissioned and replaced with a newly named one, or a building was renamed, or other important information has changed. The walls of the dispatch area are also covered with signs and whiteboards containing information that should be available by automated means in any basic CAD system.
- There are standard responses for the various types of incidents, however the dispatcher stated that actual responses depend upon who is in charge at a fire station at the particular time. If she knows a particular person is on at a fire station, she will notify that person and get a response from them.
- Incidents are entered into CAD when a dispatcher has time and the information is then fed to RMS systems.

OBSERVATIONS

The Fire CAD system is really just a record keeping and number assignment system—it lacks basically all of the expected features of Computer Aided Dispatch. The GIS portion of the CAD is too slow and cumbersome to be of help when information is needed immediately. The system is not supported and is at end-of-life. It must be replaced with a system that will aid the dispatcher in expediently performing his/her duties. An accurate and usable GIS component of CAD will help when training new dispatchers, especially those who are not Falmouth residents, and it will lessen the radio traffic by providing directions to the scene to all units.

Fire Dispatch will benefit the most from the combining of dispatch operations into a single center. The workload of the fire dispatcher is scattered between the lifesaving responsibilities of a public safety professional and the duties of a telephone operator, a receptionist, and a record keeper for less critical tasks. The dispatcher rarely gets to take breaks. When large incidents occur, the dispatcher may be alone for several hours in a building which is open to the public.

While the Fire Headquarters building has upgraded wiring and other modern features, the dispatch operation has a cobbled-together set of software tools with which to accomplish the public safety dispatch duties. Both equipment and software are aging and unsupported, and in the case of the CAD software, poorly designed and ineffective.

RECOMMENDATIONS

The Town of Falmouth is best served by combining the Police and Fire dispatch centers into a single facility and utilizing a single multi-agency CAD system and ancillary software. There are many advantages to this approach:

- Dispatchers can support each other during busy periods and breaks.
- Dispatchers can be cross-trained to ensure that there are always sufficient dispatchers of each type.
- Dispatchers can be focused on the duties of a dispatcher, following best practices and national standards, and away from ancillary duties that may impact their ability to focus on dispatching.
- Costs for software and installation are lower because only one set of applications and associated hardware are required.

- Costs for maintenance and support are lower because only one set of applications and hardware must be supported.
- Standard Operating Procedures can be developed based on combined call types and responses. This will improve efficiency in response and feed into the training program for dispatchers.
- A single training program must be developed—not two.
- Maintenance of data such as GIS data, building data, and other information typically used by both Fire and Police will only have to be maintained in one place.
- More robust activity reports can be produced off a single database.

The Fire CAD system cannot be considered as an alternative for supporting both agencies. It is ineffective, obsolete and unsupported and must be replaced.

The Police CAD, TriTech Perform, is not performing sufficiently in its current configuration to automatically be selected. Perform may be an acceptable solution, but not without action by the vendor to correct deficiencies identified by the officers and dispatchers, and not without expanding the configuration to handle the expected incident load and potential growth of approximately 55,000 incidents per year. It must be capable of operating without slowdowns and periods in which the dispatchers must write calls on paper. The TriTech CAD would also have to include the Fire module.

IXP recommends the following actions regarding CAD:

- Address the issues in the TriTech Perform CAD with the vendor. Advise them that you are combining dispatch centers and cannot consider Perform as an option for the center if the issues cannot be resolved.
- Begin the effort to develop/update Standard Operating Procedures for both Police and Fire. This information will help in configuring response rules in your CAD system and in developing a comprehensive training program for dispatchers.
- Develop a comprehensive set of Functional Requirements for CAD and any ancillary systems that are needed.
- Send the Functional Requirements to TriTech and one additional vendor and solicit them to indicate whether their proposed product meets each requirement.
- Request budgetary quotes from both vendors.
- Invite TriTech to come onsite to discuss your needs and demonstrate a product and configuration that best meets those needs. This could be a more robust implementation of Perform or another TriTech and/or Tiburon product. Ensure that sufficient time is allowed during the demonstration for end-users as well as command staff to ask questions. The goal is to understand how the product meets a requirement, and whether that method works for your agencies.
- Invite an additional vendor to come onsite to discuss your needs and demonstrate a product and configuration that best meets those needs. Ensure that sufficient time is allowed during the demonstration for end-users as well as command staff to ask questions. The goal is to understand how the product meets a requirement, and whether that method works for your agencies.
- If neither vendor presents a satisfactory package, widen the search by entering into a full procurement process.
- Once the vendor is chosen, develop a comprehensive implementation plan to ensure a smooth transition to the new CAD and the new consolidated communications center.
- Leaving the doors to the firehouse open when no one is present except the dispatcher is a safety and security issue. If all fire personnel must leave headquarters, the doors should be closed.

As stated previously, the CAD system that supports the Fire Department is, at best, a logging system that assigns the next number for a fire incident. The system is beyond end-of-life and is not supported from a software or hardware standpoint. It provides little in the way of CAD features, but for new dispatchers who are unfamiliar with the geography of the Town, some of the GIS features are important tools that are needed. A catastrophic failure could occur at any time, and The Town may wish to address that problem before the new, consolidated communications center is completed.

The least expensive way to implement reliable CAD functionality quickly would be to work with TriTech to address the issues related to Police dispatch, and then negotiate the best price to add the TriTech Fire module to the existing system. This would involve providing hardware, additional power, and connectivity so that a Fire CAD workstation could be installed at the Fire Department that would access the CAD server at the police department. This configuration would provide much needed CAD capability until the consolidated communications center is completed. A significant portion of the costs associated with establishing this option, such as data loading, configuration, and training activities, as well as some of the equipment costs, would be savings realized if the TriTech solution ends up being chosen as the combined CAD solution moving forward.

The following activities would be required to implement the TriTech Fire CAD:

- Gather Fire Dispatch requirements including interfaces to the existing Zoll and Top Gun RMS systems and the planned Image Trend RMS.
- Ensure that TriTech agrees to address the Police CAD issues.
- Evaluate TriTech's Fire CAD module and ensure it meets critical requirements and can interface to the RMS systems.
- Negotiate and purchase the Fire CAD module and required interfaces.
- Develop an implementation plan to load Fire data, configure Fire and combined responses, and update the mapping data, as needed, to support Fire dispatch. Execute plan.
- Evaluate the changes needed to the Fire facility to install the dispatcher workstation. Install the needed improvements and hardware.
- Implement connectivity to the CAD server at the Police Department.
- Develop a training plan and program for Fire dispatchers and implement it.
- Implement Fire CAD.

CAD ASSESSMENT CONCLUSION

The best approach for the Town of Falmouth is to combine the dispatch operations into a single facility and organization that is focused on public safety activities. That operation is most efficient and cost-effective if it is provided with the appropriate tools for dispatching and public safety activities. Such software tools represent a significant investment of public funds and will be in use for a decade or more. As such, it is important to document all of the Town's requirements for the software and to ensure that the vendor chosen meets the Town's needs. IXP appreciates the opportunity to assist you in this effort and stands ready to help you in moving forward. We have the capability and experience to assist you in all aspects of the recommended actions—from planning to vendor selection—from SOP development to training curriculum development—from procurement to cutover and implementation.