

Transitioning from a Basic Life Support System to an  
Advanced Life Support System in Pewaukee Fire Department

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**CERTIFICATION STATEMENT**

I hereby certify that this paper constitutes my own product, that where the language of others is set forth, quotation marks so indicate, and that appropriate credit is given where I have used the language, ideas, expressions, or writings of another.

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### Abstract

The problem for this research was the need for Pewaukee Fire Department to transition from a Basic Life Support Service to an Advanced Life Support Service to provide the same level of Emergency Medical Service to mutual communities and the community. The purpose of the research was to determine how Pewaukee would make the transition.

The descriptive research in this paper looked at how other organizations were able to successfully make the transition to a paramedic service. Research also was conducted to find the operating cost associated with the transition along with determining the changes in operations for Pewaukee Fire Department. The final part of the research determined recommendations Pewaukee could use to make the final transition to a paramedic service.

Research found the requirements the State of Wisconsin has to become a paramedic service. The combination of the State requirements and operational plans from area fire departments assisted to determine the type of system Pewaukee Fire Department should work toward accomplishing.

The paramedic service transition also required a look into funding the service. Pewaukee would need to revise the budget in order to fund training, operational supplies, plus wages in order to become a successful paramedic service. Funding for the service in an economic time when budgets are tight was not a great challenge. Pewaukee had already taken steps over the course of the past few years to prepare for the transition. Working with another local paramedic department under contract ensured certain funding for the stand alone Pewaukee paramedic service.

Pewaukee could easily handle making the transition to a paramedic service based on the work the department had in years prior. Continued discussions and approval from the City Common Council along with slight budget changes would make the program a success.

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Pewaukee Fire Department

The fire service in the United States evolved from the colonial period when men were appointed as fire wardens. These wardens would patrol the streets looking for signs of a fire. A warden who spotted a fire would use a wooden rattle to alert the community of the fire danger. Emergency Medical Service (EMS) was not a consideration at that time to the colonials.

EMS in the United States had its roots in 1966 with the federal government taking control based on paper titled *Accidental Death and Disability: the Neglected Diseases of Modern Society* (Deziel, 2010). The findings of this paper and other reports prompted the government to fund programs to train individuals in pre hospital medicine. The results of these funds created numerous programs which became the basis for the paramedic program.

The paramedic program grew in popularity over the decade since the government had started funding the program. However, by 1976 there were only 214 paramedic services across the United States (Page, 1979). Today there are thousands of paramedic services operating in the United States. According to Coleman (1988), there have been no recent surveys to determine the exact number of paramedic services within the United States. The National Registry for Emergency Medical Technicians does not maintain the number of services within the United States. State EMS offices maintain a list of licensed services per county of the state. Additional research would need to be conducted to tabulate all the counties within each state to determine the number of paramedic services within the United States.

The past decade within Waukesha County has seen an increase in paramedic services offered by local fire departments. The increase in paramedic services in the county coincides with the increase in services being offered across the country since the terror attacks on the World Trade Center on September 11, 2001. The terror attacks on the Trade Center buildings brought to the forefront the need for the best possible services a fire department can offer.

The problem is the Pewaukee Fire Department (PFD) needs to transition the department's Basic Life Support (BLS) service to an Advanced Life Support (ALS) service in order to provide the same level of ALS Emergency Medical Service (EMS) to mutual aid agencies and the community. The purpose of this research is to determine how PFD can transition from a BLS service to an ALS service for mutual aid agencies and the community.

A descriptive research method will answer the following questions:

1. How have other fire departments transitioned from a BLS service to an ALS service?
2. What are the associated operating costs for transitioning to an ALS service?
3. How will the transition to ALS service impact operations for PFD?
4. What recommendations will be needed for implementing and operating under the new ALS service system?

### **Background and Significance**

The PFD was established back in 1876. The department operated as a single village fire department protecting a rural community. History of department is sparse from the creation of

the department until the mid-1950's. The fire department shifted to a combined fire department from the town of Pewaukee and the Village of Pewaukee operating from two separate budgets. The town of Pewaukee Fire Department operated from two fire stations and the Village of Pewaukee Fire Department operated from one fire station.

The two departments had one fire chief overseeing all operations of each department. The chief of the department was paid a stipend on an annual basis from both communities. The department personnel worked together to provide fire and EMS to both communities. Personnel were hired by each community separately but continued to work together as one department. The communities purchased equipment separately that was each owned by the community who purchased the equipment. Operating supplies were separate as well. The fire chief would evaluate the needs of each department separately and submit requests to each community government. Each community budgeted money for payroll of personnel and for operations of all fire department facilities.

The fire departments worked with each other to maintain a consistent level of service between the two communities. The assistant chiefs and deputy chiefs were promoted to oversee the operations of both fire departments. The department officially combined in 1995 to become a joint fire/rescue department.

The two communities agreed to a single Pewaukee Fire Department which hired its first full time fire chief in 1995. The new chief of the department was hired from a nearby large metropolitan fire department. The chief was a captain at the urban department and operated very little with EMS. The department hired a full time deputy chief and captain as part of the

department new command staff. All personnel from both departments were rehired under the new organization.

PFD continued to grow over the years following the combining of both departments. The department operated as a BLS service for the communities until 1997. PFD applied for and was granted approval to operate as an Emergency Medical Technician Intermediate 85 (EMT I-85) service in 1997. The new service allowed the department to start Intravenous (IV) therapy as well as administer six medical drug therapies (Wisconsin Department of Health Services, Bureau of Local Health Support and EMS, 2011b). The medical drug therapies included narcan, nitroglycerine, albuterol, glucagon, dextrose, and aspirin. The department has already been approved to administer activated charcoal which had been removed from use by the medical director. The department also had approval to use epinephrine, the MARKI auto injectors, and oral glucose prior to receiving a license as a EMT I-85 service provider.

PFD was one of the first departments in Waukesha County to advance to this new level of medical service. City of Waukesha Fire Department (CWFD), a career fire department to the south of Pewaukee, had been a paramedic service since 1978. The City of Brookfield Fire Department (CBFD), another career department to the east of Pewaukee, had been a paramedic service since 1996. CWFD and CBFD were the only two paramedic services within Waukesha County up until 2000. The last decade has seen an increase in the number of paramedic services in Waukesha County.

Lisbon Fire Department started operating with a paramedic service in 2007. Lisbon fire department is a combination fire department to the north of Pewaukee. Big Bend Vernon Fire

Department was another combination fire department who started paramedic service in 2002. Vernon Fire Department recently separated from Big Bend and revised their paramedic operational plan in 2010. Mukwonago Fire Rescue's service started in 2002 in southern Waukesha County. City of Delafield Fire Department created their paramedic service in 2000.

City of Delafield has since joined with three other communities to create the Lake Country Fire Department (LCFD) and have revised their paramedic service in 2010. PFD has been working with LCFD for the past two years on a paramedic service. There have been three other area departments that have increased their level of service beyond the service PFD offers. Currently there are 10 fire departments in Waukesha County that provide EMT – Paramedic service (Wisconsin Department of Health Services, 2011).

PFD has mutual aid agreements with the surrounding communities in Waukesha County for fire service. The mutual aid agreements are in the form of the Mutual Aid Box Alarm System (MABAS Wisconsin, 2011). The box alarm system allows fire departments to selectively pick which mutual aid agencies it would want to respond in the event of an emergency incident where all available department resources have been used and additional resources are required. PFD has been removed from the list of mutual aid agencies for EMS due to the inability to provide the same level of paramedic service.

PFD is the 7<sup>th</sup> busiest department out of 26 fire departments within the county averaging a little under 1600 calls for service a year despite the lack of advanced level of EMS service. Table 1 shows the amount of emergency incidents PFD has responded to over the years of 2008 to 2010. The high volume of emergency incidents PFD responds for has promulgated the need to

conduct this research. PFD will need to advance their level of care to provide the best quality of care for the citizens within the community. PFD will also need to advance their level of care to provide care to those mutual aid agencies that request them.

Table 1

*Pewaukee Fire Department Annual Call Volume for 2008-2010*

	Fire	EMS	total
2008	332	1,289	1,621
2009	279	1,231	1,510
2010	318	1,248	1,566

Research of the transition from BLS to ALS follows the National Fire Academy Executive Leadership course content regarding adaptive change (National Fire Academy, 2011). PFD will undergo a large change in training, organization, and operations in order to provide ALS care. Staff members will need to support this adaptive challenge of changing the hearts and minds of the members who will be operating under the new ALS system. The members will need to be motivated to see the need for change and become part of the change which will enhance the organization.

The research conducted within this paper meets objective number three of the 5 United States Fire Administration Operational Goals. PFD's advance to provide ALS care meets the need to improve the fire and emergency services' capability for response to and recovery from all hazards goal (United States Fire Administration, 2010). The ability to transition to an ALS level of care provides better care to critically sick or injured patients who live, work, or travel

through Pewaukee. The transition also allows mutual aid agencies to rely on Pewaukee to provide the same or better level of service the mutual aid agencies are providing for their communities.

### **Literature Review**

PFD transitioned to EMT I-85 back in 1997. The department provided BLS care which included administering oxygen, bandaging wounds, providing cardiopulmonary resuscitation (CPR), and obtaining necessary vital signs (Wisconsin Department of Health Services, Bureau of Local Health Support and EMS, 2011c). The EMT I-85 license allowed the slow transition to providing a higher level of care for sick or injured patients within Pewaukee. The EMT I-85 level of care allowed for a certain level of advanced care which was still much lower than the paramedic level of service.

PFD was able to provide cardiac related emergency drug therapy, respiratory emergency drug therapy, and other advanced skills beyond the EMT-Basic scope (Wisconsin Department of Health Services, Bureau of Local Health Support and EMS, 2011b). Providing care at the EMT I-85 level allowed the department to administer Narcan for drug overdose victims of narcotics, Albuterol for patients with respiratory distress, Dextrose or Glucagon for low blood sugar unresponsive diabetics, and Nitroglycerine plus aspirin for patients having cardiac related chest pain. The EMT's were also able to start intravenous fluid access for patient care. The medical director did feel the use of Atrovent for respiratory distress patients was needed by PFD. The medical director felt that the use of Albuterol for a respiratory distress patient was sufficient. The

skills to administer the medication and start IV's required additional training which was provided by Waukesha County Technical College (WCTC) instructors.

EMT – Basic training requires 110 hours of classroom and practical training in order to partake in the National Registry certification exam (Bock, H. C., Maull, K. I., Samuels, D. J., 1997). EMT – Paramedic requires 1000 – 1200 hours of classroom and practical training in order to partake in the National Registry certification exam (Paris, P. M., Roth, R. N., Stoy, W. A., 2004). All training for PFD members for both fire certification and EMS licensing has been through WCTC.

WCTC offers two sessions of paramedic training. The fulltime class training meets for class 40 hours a week for 22 weeks. Included in the 22 weeks and following the didactic classroom is emergency room clinical time and ride along time with an established paramedic service (Waukesha County Technical College, 2011). Students attend class Monday through Friday for 8 to 9 hours each day. Students begin to sign up for emergency room clinical time after the 10<sup>th</sup> week. Students then are able to sign up for ride along time with an established paramedic service after the 15<sup>th</sup> week. Medications a paramedic learns to administer are listed in Appendix A.

The second session offered by WCTC is a part time training the covers two full semesters where students meet three days a week for 5 hours each day. The second session also includes the clinical and ride along time that is required for the course. Cost for either of the sessions is \$4,510.98 which includes cost for the AHA ACLS and AHA PALS (Appendix B). The cost does not include \$360.00 for the student to partake in the written and practical test administered

by the National Registry of Emergency Medical Technicians nor does it include the cost of books needed for the class. WCTC changed books for the paramedic class at the time of this research. The author was not able to obtain cost for the books since the school did not have cost. The student that successfully passes all classroom work, the written and practical Registry exam is then eligible to receive a license as a paramedic in the State of Wisconsin.

The State of Wisconsin allows for operation of two different types of paramedic systems. The State of Wisconsin allows for services to operate as a single paramedic system or a two paramedic system (Emergency Medical Services Licensing, Certification, and Training Requirements, 2010). The local service provider shall require two paramedics to respond to emergencies provided the patient is located within the service provider response district. Paramedics responding from different locations within the district are allowed. Both paramedics do not need to respond to the emergency together. Paramedics may respond from different locations within the response district.

The first arriving paramedic is allowed to provide care at a paramedic level to include use of drug therapy prior to the arrival of the second paramedic. The start of drug therapy by a single paramedic is allowed providing there is a reasonable time for the arrival of the second paramedic. The first paramedic shall provide care to one level of care below paramedic if the second paramedic response will be delayed. The paramedic would be allowed to provide advanced level of care up to EMT-Intermediate while waiting for the second paramedic to arrive. The State of Wisconsin establishes the time frame for the second paramedic to arrive at the scene during the operation plan review the service provider submits. The paramedic would only be

allowed to administer those medications as listed in Appendix C compared to the medication list for paramedics in Appendix A.

One paramedic is allowed to transport with the patient provided there is at least one EMT-Basic transporting as well. The second paramedic is allowed to leave the scene provided care for the patient falls within specific patient care protocols or verbal orders from a medical director. The paramedics must follow specific protocols and both paramedics must agree to the treatment plan for the patient to send one paramedic on the transport. The transport paramedic must also have enough experience and comfort level to transport the patient alone.

Agencies that wish to upgrade their EMS service must apply to the State of Wisconsin for license upgrade. The State of Wisconsin requires all EMS service providers to submit a feasibility study, operational plan, and application in order to be licensed by the State of Wisconsin to provide such service (Emergency Medical Services Licensing, Certification, and Training Requirements, 2010). The State reviews the feasibility study for a period of 60 days then provides feedback. The service provider then submits the operational plan and application for licensure to the State for another 60 day review. A service provider receives approval if the paperwork meets the requirements for the service provider license level.

The service provider does not need to provide the service level immediately. The service provider has 12 months to provide the service 24 hours a day. The 12 month period allows the service provider time to train personnel and obtain any necessary operational supplies needed to provide the service. The service provider makes all attempts to respond with paramedics to all calls that have been established to be an ALS level of service. The service provider is allowed to

extend the 12 month period to another 12 month period should the provider feel they are not ready to provide the service 24 hours a day. The service provider would need to file for an extension with the State of Wisconsin and discuss the reasons for the extension (Emergency Medical Services Licensing, Certification, and Training Requirements, 2010).

The State may choose to accept or deny the extension. A service provider that does not meet the criteria listed in the operational plan and the 12 month period or extension period may have their service provider license revoked. The service provider then would only be able to provide the service level they were at prior to submitting for the upgrade service.

The Lisbon Fire Department (LFD) operates with a two ALS system (Mason, D. J., 2007). LFD staffs their station with one licensed paramedic and one licensed EMT-Intermediate covering various hours of the day. LFD maintains two ALS providers available for emergency incidents 24 hours a day. LFD continues to train personnel to the paramedic level to provide a two paramedic system. LFD relies on mutual aid to assist with paramedic care in the event their ALS providers are at a separate emergency incident.

LFD provides ALS service to an agency automatically to the west. Hartland Fire Department (HFD) has agreed to have LFD respond to certain types of emergency medical calls with a paramedic. The LFD response to HFD is considered an intercept system as approved by the State of Wisconsin (Emergency Medical Services Licensing, Certification, and Training Requirements, 2010). Hartland provides the ambulance staffed with EMT-Basics and IV Techs. LFD responds with two paramedics to assess the patient. LFD will transport on Hartland's ambulance if the patient is critical enough to need paramedic services. Members from the

Hartland ambulance will assist LFD with transferring the vehicle LFD responded to the incident in back to Hartland fire station after the ambulance with the LFD paramedics transport to the hospital.

The Lake Country Fire Department (LCFD) operates a two paramedic system. LCFD staffs their department with three paramedics covering 24 hours shifts (Herzberg, G., 2009). LCFD also provides intercepts for area departments who request them for critical care patients. LCFD responds with two paramedics in an intercept vehicle and provides care for the patient in the mutual aid agency ambulance. LCFD contracts with agencies for the intercept service to allow reimbursement to LCFD for the paramedic response.

LCFD operates with three intercept vehicles. Two vehicles remain at their fire station to respond to intercept requests and to respond within their communities they cover. The third vehicle is contracted to stand by at Merton Fire Department which is north of the LCFD response area. The intercept paramedic responds to requests for a paramedic for some northern communities as well as within LCFD response area when the other two intercept vehicles are at emergency incidents. The LCFD is reimbursed on a monthly basis by the Merton Fire Department to cover costs of operating at the Merton station.

The Vernon Fire Department (VFD) is south central Waukesha County operates a one paramedic system. VFD responds with at least one paramedic to the scene of all EMS emergencies (Felde, 2010). The crew on duty has at least one paramedic working in the fire station each 24 hours. The additional paramedic responds based on the level of priority the emergency is dispatched. The first paramedic starts treatment of the patient while the second

paramedic is responding to the scene. The first paramedic may cancel the second paramedic if the patient is not critical and the first paramedic can provide the care alone. The first paramedic may only cancel the second paramedic based on specific criteria established by the medical director.

VFD utilizes Waukesha Memorial Hospital (WMH) for medical control and training. VFD works with the EMS coordinator and the medical director to train their paramedics after the paramedic has obtained their license. VFD does not have the personnel experienced enough to provide sufficient training for the paramedics in their organization. VFD works with the EMS coordinator to set up trainings and seminars for their EMS personnel.

The summary of the previous three paramedic services only touched the type of service the departments operate within Waukesha County. Laconia Fire Department in New Hampshire had to deal with how to support a 24 hour paramedic service. Staffing the department with paramedics was the main focus Laconia had to contend with (Carrier, S. M., 2000). Staffing for a paramedic service required training personnel. Paramedic training in New Hampshire required almost 2,000 hours of time for their members to become licensed. Staffing issues were created for the day to day operations by taking personnel offline from firefighting status to become trained as paramedics.

Costs associated with course tuition and overtime to cover the firefighters in class caused a budget problem which needed to be addressed by the community government officials. Simply stating the program was going to occur was a surefire way for the program to be suspended.

Working with the local hospital and through public meetings brought forth the concept that the

Laconia Fire Department and the Lakes Region General Hospital were going to form a partnership to provide the service (Carrier, S. M, 2000).

PFD had to decide how they would be able to provide a paramedic service despite the limited amount of money available to start the service. PFD decided to contract with LCFD to provide a paramedic intercept program in Pewaukee. The intercept program was approved by the City common council in 2009 and a line item was placed in the budget according to the ambulance budget portion of the 2009 City of Pewaukee Budget (Appendix D). The approval of the intercept program allowed PFD to provide paramedic service to the citizens in Pewaukee who needed the critical care skills of a paramedic.

PFD had placed funds in the annual budget for 2010 to have two full time firefighters partake in the full time paramedic course through WCTC (Appendix E). Paid-on-premise (POP) firefighters were also allowed to partake in the course but were required to pay for the course themselves. POP firefighters did not receive approval from the department to have tuition paid for since the POP firefighter may use the license obtained through PFD to attain a position on a different career fire department. WCTC graduated 17 paramedics in January 2011. Two full time firefighters and seven POP firefighters from PFD were among the graduates. PFD also had funds available to send two more firefighters to paramedic training in January 2011. Three POP firefighters also enrolled in the paramedic course.

### **Procedures**

Research for this project had started back in 2009 when the command staff for PFD decided to look into upgrading the current EMT-IV Tech service to a paramedic service. The department staff discussed the transition with area fire departments that had made the transition from a BLS service to an ALS service. The information obtained from those departments was used as a starting block for the department. The author of this paper began reviewing the State of Wisconsin Operational Plan those departments submitted for obtaining their paramedic license.

The author obtained emergency incident responses from Waukesha County Communications (WCC) dispatch center. Review of emergency incident's PFD responded to from 2008 to 2010 was conducted to determine the need for a paramedic service as seen in Table 1. WCC utilizes Emergency Medical Dispatch procedures. The procedure involved obtaining information from the caller utilizing a key set of questions (Clawson, J. J., Dernocoeur, K. B., 2006). The dispatcher is then able to determine the call for service would fall under one of 32 code determinants. Each determinant has three to seven codes which determine the level of importance the call should be dispatched. The codes are listed from Omega (the lowest priority call) to Echo (the highest priority call).

The Omega type of emergency incidents refers to a low priority call where the patient may not need medical assistance. Omega types of calls include a need for a medical release at a motor vehicle accident where the patient does not claim any injury. The patient who fell not complaining of any injury and just needs assistance standing up because they may be elderly is

another type of Omega call. The higher the call code, the more severe the call may be for the EMS provider.

The Echo types of calls are the most severe call for an EMS provider. A patient who is pulseless non-breathing (PNB) would be coded as an Echo call. The Echo call is a true emergency that should require the care of the highest level of EMS service available.

The Computer Aided Dispatch (CAD) software used by WCC did not allow for a report that produced the number of calls based on the type of priority. A report was obtained that listed each call for the year with the type of call and the priority. The author tabulated the number of runs into a condensed report as listed in Table 2.

Table 2

*Pewaukee EMS Calls by Priority for 2008-2010*

2008										
Fire			Omega	Alpha	Bravo	EMS	Charlie	Delta	Echo	Total
332			51	199	404		235	364	36	1621
2009										
Fire			Omega	Alpha	Bravo	EMS	Charlie	Delta	Echo	Total
279			49	158	371		273	349	31	1510
2010										
Fire			Omega	Alpha	Bravo	EMS	Charlie	Delta	Echo	Total
318			14	268	378		212	340	36	1566

PFD medical director Dr. Mark Schultz of WMH stated during a meeting on May 18, 2011 that based on Medical Priorities dispatch card set, all Charly, Delta, and Echo priority calls should be considered ALS response. The author then separated the results in Table 2 in order

to show the number of ALS versus BLS calls for emergency medical service.

Table 3

*Pewaukee ALS versus BLS calls for 2008-2010*

		2008	
	BLS Calls		ALS Calls
	654		635
		2009	
	BLS Calls		ALS Calls
	578		653
		2010	
	BLS Calls		ALS Calls
	660		588

The research and subsequent creation of the tables assisted the author through the process of writing this paper. The historical data obtained created a background of the organization. The data was also used part of the recommendations within this research paper for the transition to an ALS service.

The author utilized historical research method to evaluate how other fire departments made the transition from BLS to ALS. The information obtained came from obtaining the operational plans of each department. The author emailed the fire chief or the chief of EMS for the departments who most recently upgraded to a paramedic service. The basis of the email was to obtain a copy of their operational plan they submitted to the State of Wisconsin. The organizations were receptive to releasing this information for review by the author. The author used the information obtained from the operational plans to review how local organizations transitioned to an ALS Service.

The author utilized descriptive research to determine how other fire departments operate a paramedic system. Reviewing each department operational plan provided insight about the type of paramedic service allowed by the State of Wisconsin. Choosing a one paramedic system or a two paramedic system was a focus for the overall operations for PFD (Emergency Medical Services Licensing, Certification, and Training Requirements, 2010).

The operational plans from the area fire departments as well as the approved types of systems the State of Wisconsin allows assisted in determining which type of paramedic system PFD should operate. The type of paramedic system coincided with the research conducted to understand how PFD should staff the department to operate the system.

Historical research of the State of Wisconsin Statutes produced the procedures and requirements to become a paramedic service in Wisconsin. The basis for continuing research was needed to provide a framework for the transition. The research focused on answering the following question:

1. How does a fire department obtain an upgrade to paramedic service?
2. How long will the process take to obtain a license?
3. Is there a grace period to operate a paramedic service 24 hours a day?
4. What happens if the operational plan needs to be revised?

PFD would need to make changes to the budget in order to operate a paramedic system with their own license. Review of the budget for 2008, 2009, and 2010 needed to be accomplished. The budget review allowed the author to make recommendations to the budget to

afford training and operating the system. Cost associated with training personnel was only a small portion of the change needed in the budget.

The budget would also need to reflect costs for new equipment and medications need to operate the system. A review of just the ambulance portion of the budget was needed since the amount of money needed to be moved in the budget could possibly be accomplished within the ambulance portion. PFD was in process of other large scale operational changes which limited the amount of money to shift in the budget to cover the costs of the paramedic program.

Research into the type of supplies and medications was conducted to determine the amount of supplies PFD would need to purchase in order to operate a paramedic system. The list of medications in Appendix A was a list the State of Wisconsin approved for paramedics. The list was not all inclusive of a paramedic system. The medical director for each service determines the amount and type of medications the service is allowed to perform (Emergency Medical Services Licensing, Certification, and Training Requirements, 2010). Appendix F was created to determine the cost of the medications needed for the paramedic system. Dr. Mark Schultz did not have a set document to cite for the amount of medications and types of medications a new paramedic service is allowed to operate. The list is based on discussion between the author, Dr. Schultz, and the Division Chief of EMS for PFD.

The costs found in Appendix F were determined to be used in this research paper following research with other area paramedic services. Each service stated the cheapest cost to obtain medications was through Waukesha Memorial Hospital (WMH). The pharmacy at WMH had set up a system years prior with CWFD to obtain the medications needed for the paramedic

service to replenish supplies used in the field while transferring the patient from the ambulance crew to the hospital emergency room. Local companies that provide EMS supplies and medications were more expensive when comparing costs of a sample of medications and supplies.

The author looked into continuing the paramedic program for the future of the program. Operating supplies for the program would need to be reviewed at a later date to determine the amount of money to budget for the future. The future also involved the amount of continuing training the paramedics would need to maintain their license.

A review of the components of the National Registry renewal process was completed. Appendix F depicts the amount of hours and topics a paramedic would need to renew their license. The National Registry of Emergency Medical Technicians (2011) requires paramedics to complete continuing education to renew their license every two years. The Wisconsin Department of Health Services, Bureau of Local Health Support and EMS (2011a) also requires licensed paramedics to complete a refresher plus Pediatric Advanced Life Support (PALS) renewal and Advanced Cardiac Life Support (ACLS) renewal. The requirements for continuing education are part of the ongoing process to maintain a license for the paramedic and PFD.

## **Results**

The author of the paper found the dynamics of establishing a paramedic service to be quite extensive. The three fire departments mentioned in this paper thus far provided large insight as to how much is involved in establishing the service. Simply placing people through training and having them operate as a paramedic is far from true. The planning process with the

State of Wisconsin, the training requirements, the amount of time to become licensed, the amount of money needed to operate the system, and the operational plan changes for the system is very time consuming.

The ability to plan ahead to start preparing to operate the system is key. Training personnel prior to establishing a service license assists with the transition. The information found from this review process will be further demonstrated within the rest of this paper.

PFD will have a long road to make the transition to a paramedic service. The need to make the transition is obvious based on the percentage of paramedic related calls the department has responded to over the past few years. 80.2 percent of the calls for service are for EMS while 19.8 percent of the EMS calls are classified as ALS calls averaged over three years according to Table 1. Possible reasons for a decrease in run volume have been attributed to the recent recession. People have lost jobs and may not have insurance to cover the high cost of being transported by an ambulance.

Table 3 presented the basis for establishing a paramedic service. Nearly 50 percent of the EMS calls PFD responded to could be classified as ALS calls. The consistency of each year in the table provides evidence that an advanced level of care would be beneficial for the patients requesting service from PFD.

### **How have other fire departments transitioned from a BLS service to an ALS service?**

PFD has the choice to operate as a two paramedic system or a one paramedic system according to Emergency Medical Services Licensing, Certification, and Training Requirements

(2010). EMS services that upgrade their level of care after January 1, 2000 may choose to operate as a two paramedic system provided two paramedics respond on one ambulance or from separate but close locations. The ability to operate either system allows PFD to make a proper informed decision as the operational plan is prepared. The amount of licensed paramedics for PFD will dictate which service will work best for PFD. Training of personnel is key to be able to operate a paramedic system. The process has started and PFD will need to continue training personnel in order to maintain the staffing needed to operate.

Area departments have chosen the type of system based on their staffing levels and the need of the community. Career departments such as CWFD and Cbfd have chosen a two paramedic system. Each department has members cross trained to be paramedics and have sufficient personnel to staff each of their ambulances with either two paramedics or a paramedic and an EMT. The second paramedic may be staffed on the engine which responds with the ambulance. Based on the condition of the patient determines if the second paramedic transports with the patient or the ambulance paramedic transports alone.

LCFD and LFD have chosen to use both types of systems based on the need of the incident. The level of training that a mutual aid agency has also allows LCFD and LFD to make the determination whether to send one or two paramedics to the request for assistance. The two departments always have at least one paramedic respond to an emergency but if a second is unavailable, then the department operates the one paramedic system. The flexibility to choose also depends on the level of comfort the medical direct for each agency has with the training and experience level of the department.

LCFD responds with both types of plans. Two paramedics will respond within their own community they serve when an emergency call is received. Response as an intercept to mutual aid communities is served by sending one paramedic. Based on the type of call for service determines if they change their response to send two paramedics.

LFD and VFD determined that a single paramedic response suits them for response initially. The paramedic is staffed on the ambulance and second paid-on-call paramedic responds based on the nature of the call. The paramedics on duty have the choice to call off the paid-on-call paramedic should the patient needs change upon exam. The system works well to minimize the response of paramedics to a call that may not need paramedic service. The second paramedic is then able to respond to additional calls for service should they arise.

Laconia Fire Department was able to work with the local hospital to assist with setting up the paramedic system. Staffing was the key to the success of the program. Working with the hospital to educate the public and the common council proved to keep the system moving forward. Education and open communications regarding the process to become a paramedic system is a step necessary to support a paramedic system. Citizens may be critical of cost for operating a new system if taxes need to be raised. Attaining support from citizens and business help the fire department moved forward with a system that will only help those citizens if they need the service.

### **What are the associated operating costs for transitioning to an ALS service?**

The cost to transport a patient to the hospital assists PFD in offsetting cost associated with the transition and eventual operations of a paramedic system. The money allocated in the

budget for operating with LCFD will also assist PFD in transitioning to a paramedic system. The \$150,000 placed in the budget in 2009 can be used to train personnel and purchase the operating supplies needed to function as a paramedic system. The fire chief would also need to complete a thorough review of the budget to reallocate money to ensure funding for the paramedic program while still maintaining the additional services PFD offers.

The 2010 budget as seen in Appendix E shows a decrease of \$40,000 in the line item budget for Lake Country paramedic intercept. The \$40,000 was used to pay for the tuition to send two full time firefighters to the 40 hours a week paramedic class at WCTC. The cost of tuition, books, and testing totaled \$5,020.00 per firefighter. The two firefighters were taken off the shift rotation and day to day operations were affected.

A part of the money transferred out of the line item was placed in the overtime budget in the personnel operations budget. \$22,000 was set aside for the purpose of overtime. The remaining funds were kept in the training budget to offset any additional costs that were not foreseen.

Initial costs of medications and supplies are seen in Appendix F. Paramedic class costs for four to six full time firefighters will be approximately \$20,400 to \$30,600. The cost for tuition to send full time firefighters in the year 2012 will be reduced in 2013 since most full time firefighters will have completed the training and less firefighters' will need to complete the training.

There is no cost for obtaining a license within the State of Wisconsin. The time involved to produce the feasibility study, operational plan, and application are part of the responsibility of

the Chief of EMS. The ongoing cost of training for personnel is also covered by completing the training requirements as seen in Appendix G from the State of Wisconsin. PFD along with assistance from WMH staff will be able to negate paying for specific paramedic refreshers by training paramedics throughout the two year licensing requirement.

**What recommendations will be needed for implementing and operating under the new ALS service system?**

The first staffing roster in Appendix H Table H1 shows a current state of paramedics based on shift. The fulltime firefighters operate a 24 hours shift rotation. POP members that work nights and weekends are on shift every other fulltime shift as seen in Appendix H Table H2. The second staffing roster in Appendix H Table H3 shows the change in personnel based on licensed paramedics to be used to staff each station. Each station would have 1-2 paramedics assigned per night and weekend rotation. Daytime during the week is more difficult. PFD command staff would need to have discussions with daytime paramedics to review how to maintain at least 2-3 paramedics on duty for each daytime shift.

The medical director for PFD has stated he would like to operate a two paramedic system at the beginning of PFD service. The medical director stated in the meeting on May 11, 2011 that a new paramedic system with newly licensed paramedics should have two paramedics working together for the care of the patient. The medical director stated he feels the paramedics care both work to make proper decisions on the care of the patient compared to one paramedic needing to make the decision on his/her own. Two paramedics allows for reduction in mistakes when

choosing the proper treatment based on paramedic protocols and when having to perform calculations to administer certain medications.

PFD should continue utilizing WMH for purchasing medications and supplies. PFD currently uses WMH to purchase supplies and medications for the EMT-I85 license. The continued relationship with WMH allows for the ease in transition for purchasing needed supplies and medications to support the paramedic program.

### **Discussion/Implications**

The question of need for PFD to transition to a paramedic service is answered by the number of calls. The ability to make the transition has been proven based on change in the operational budget when comparing Appendix D for 2008-2009 ambulance budget and Appendix E 2010 ambulance budget. The need for the community and the City of Pewaukee Common Counsel to agree to the transition will need to be part of the transition.

The common counsel will need to review the budget changes and increases that will be needed to make the transition. The City may see that since PFD will no longer be contracting with LCFD that there is a savings in the fire department budget and simply take the money away to be considered revenue to offset the entire City budget. The fire chief would need to keep very good open communications with the City administrator and the mayor to inform them of the budget needs and changes in the budget. The City would see a budget saving over time with approval for a stand-alone PFD paramedic system. The initial \$150,000 budgeted for LCFD in 2009 would be reduced once PFD has the initial supplies and medications purchased. A review

after 3, 6, and 12 months to determine the amount of supplies used would help to establish an actual ongoing operational cost.

The assumption that the City will continue funding this transition also coincides with the training of personnel. A lack of trained paramedics will surely result in the inability to operate the system alone according to State of Wisconsin. The State does have the authority to suspend a license to an EMS provider if the provider does not meet the requirements of the State and the approved operational plan (Emergency Medical Services Licensing, Certification, and Training Requirements, 2010). The availability of seats in the paramedic class offered is a consideration which needs to be addressed.

PFD is not the only department that WCTC trains for paramedics. Two other fire departments within Waukesha County are also working to set up a paramedic system. The two departments will be sending their personnel to WCTC to be trained. WCTC offers a class size of 12 to 16 students. The limited number of students allows students to schedule their clinical time and ride along time without having to compete with each other for their requirements. PFD would not be able to send personnel to class should the other departments in the area fill the seats with their personnel who need to be trained as much as PFD firefighters would need the training.

PFD has a good number of personnel trained at the paramedic level. The number of fulltime paramedics compared to POP paramedics becomes a concern. PFD simply can't hire the POP paramedics as fulltime members. The City would need to approve adding fulltime members to the staff by also funding the increase in wages and benefits. The fulltime hiring process would

also need to be completed. PFD recently completed an eligibility list for fulltime positions. The process started in February 2011 and as of July 2011 has not been completed.

The advantage PFD has is that all fulltime members must be a POP member of PFD prior to application. PFD does not hire fulltime firefighters from outside the organization. PFD saves money by not having to advertise for the positions, pay for new uniforms and turnout gear since the POP member has already been issued the equipment when they were hired as a POP member. PFD also saves money by reducing the hours needed to train the new fulltime member. The new fulltime member has a very good understanding of department operations and equipment since they have been working within the organization.

PFD will be able to take advantage of the POP paramedics' education to hire as fulltime members. The POP member would need to complete the entire fulltime hiring process but would not need to be removed from active duty to attend paramedic training since they are already licensed with PFD. The POP member hired fulltime would be able to operate immediately following basic fire training as a paramedic thus also saving PFD money by not having to pay for possible overtime to cover a fulltime member attending training.

The amount of experience a paramedic receives will be varied. PFD does not have a consistent amount of emergency incidents per day. PFD may have days when a paramedic will not respond to any emergencies. The paramedic conversely may see numerous patients in a shift. The inconsistency of emergency incidents cannot be controlled. One paramedic may accumulate good experience on shift while another paramedic on another shift may not accumulate much

experience. The amount of experience utilizing paramedic skills assists the paramedic to be a better paramedic and provide better care for patients who request the service.

Working in an emergency room at the hospital and attending training allows for a certain degree of maintaining skills and proficiency. Hands on experience at actual emergencies allow the paramedic to utilize skills at a moment's notice. The balance of life and care for a patient in training does not compare to seeing a real patient and understanding the physiological aspects of the problem the patient is experiencing. The paramedic who can receive hands on experience will allow the paramedic to become a future teacher of new paramedics to pass on valuable information that cannot be obtained in a classroom or clinical setting.

### **Recommendations**

Starting the process to transition to a paramedic service will need to start with discussions with the City of Pewaukee Common Counsel. The common counsel will need to approve the fire department to move forward with preparation of what will be involved with the transition to a paramedic service solely operated by PFD. The common counsel will also want to provide direction for the fire department.

Direction from the common counsel will assist the fire department in making the decision if the fire department will be able to transition to a paramedic service. The fact that the common counsel has approved working with LCFD to provide paramedic service is a good step for the transition. Working with LCFD has provided a good understanding for the fire department in how to operate a paramedic system.

The licensed paramedics on PFD have gained valuable knowledge and experience by working with LCFD paramedics. The PFD paramedics who have worked with LCFD will be able to provide good insight as to the needs of the new PFD paramedic system. Collaborative leadership and working together between the command staff and the firefighters will be key in making the transition a success.

Work on the operational plan and fiscal impact will be the next step following common counsel approval. The State of Wisconsin will need a comprehensive plan that will outline exactly how PFD will provide a paramedic level service. PFD should plan on a two paramedic system based on the staffing recommendation shown in Appendix H Table H3. PFD should attempt to staff each station with 2 paramedics per shift.

The staffing roster recommendation shows the ability to staff all but two POP shifts with a paramedic at each station. The fulltime roster would place one additional fulltime paramedic at station one to cover the missing POP paramedic position. The position would not be truly filled until the fulltime firefighter obtains their license and has completed additional training to operate as a paramedic on shift.

The one shift will have two paramedics at station 2 with one paramedic at station 1. The system will still be a two paramedic system for the first request for service. The ability to have two PFD paramedics for second calls of service will be based on the needs of the patient in the first call. The second paramedic may return to service and be available if a second call for service is received. The second and third paramedic then can respond to the second call to provide care for the second patient.

PFD also has the ability to call for a mutual aid paramedic to respond should the first two paramedics be unavailable. The third paramedic may start care and medication therapy while the mutual aid paramedic is still responding. The third paramedic and the mutual aid paramedic may discuss treatment options via the county wide 800 Mhz radio channels while the mutual aid paramedic is en route. The ability to communicate will allow the transfer of ideas to ensure proper care of the patient is accomplished and so the paramedics are in compliance with paramedic protocols.

Training is a key for the paramedics to keep up with their skills, knowledge, and protocols. PFD paramedics will need guidance and training during their first few years of being a new paramedic and paramedic service. WMH staff has been able to provide knowledgeable training for PFD EMT-B and IV Tech. PFD will need to find alternate means to provide the necessary ongoing training needed for the paramedics.

One recommendation is the use of a mentor program which Dr. Mark Schultz has suggested. Making recommendations of paramedics within the county who have operated as paramedics for years to assist with training PFD paramedics is one recommendation. Discussions with the City administrator, mayor, and human resources director would need to be conducted to determine how to establish pay and benefits for part time paramedic mentors.

The mentor program could last 3-5 years depending on the amount of experience each paramedic receives. Paramedics would learn from the mentors via actual emergency call response as well as in station training. The mentor could provide skills review and practice as well as protocol reviews each shift a paramedic is working. The program would be established

with the command staff and medical director setting the objectives for the mentors. The medical director would establish testing procedures PFD paramedics would need to pass to be considered able to operate without mentor guidance.

PFD paramedics who pass the medical director tests would then become the mentor for new paramedics within PFD. The mentors hired would eventually be released from duty with PFD once PFD has sufficient mentors who have passed the medical directors test to provide mentor guidance to the new PFD paramedics.

PFD should look into hiring a paramedic coordinator. A new command staff position would need to be created to oversee the paramedic transition as well as provide ongoing formalized training to the paramedics within PFD. The staff position should be a combination position of training not only paramedics but firefighters.

A training officer for PFD who is certified to teach firefighting and paramedic skills would allow current command staff members to concentrate on other aspects of the organization. The Division Chief of Training and the Division Chief of EMS operate as fulltime shift chiefs who respond to emergency incidents as well as run all aspects of training and EMS respectively. Department members training is vital to successful operation on an EMS call or fire emergency. The training chief works 24 hours shifts and is unable to provide training to the other shifts without incurring overtime.

Both shift chiefs also are not licensed or trained as paramedics. A training officer hired by PFD should have a minimum 5-10 years of experience as a paramedic to provide good training to new paramedics. The years of experience will assist the training officer to pass on

knowledge and skills about real world care. Placing the new training officer on a 40 hour a week schedule will also allow for consistent training amongst all shifts.

The management of training and EMS can be accomplished by the shift chiefs but consistency with providing the training and experience would be the job of the training officer. The EMS shift chief can continue to monitor the progress of the program and maintain the operational supply needs of the organization. Working with WMH pharmacy to obtain the needed supplies would be recommended for the department.

Review of costs for medications and supplies amongst area suppliers and WMH have proven to be cost effective for PFD to purchase through WMH. The majority of patient transports are to WMH. The medical director operates at WMH. WMH staff provides valuable training to department members. The department should continue working with WMH to maintain a good working relationship that has proven successful currently and in the past.

PFD has made strides to transition to a paramedic level of service. PFD will need to continue to work hard to provide that service alone without the assistance of another agency. Providing paramedic level service and increasing the number of staffed paramedics also allows the department to look into other avenues of providing service. Mutual aid agencies will feel comfortable requesting PFD paramedics to provide the same if not better level of service the mutual aid agency provides its own community. PFD may be able to look into paramedic interfacility transfers from a nursing home or hospital to another hospital. Interfacility transfers allows for an increase in revenue produced for the City. The increased revenue will also assist in offsetting the costs of establishing and maintaining paramedic service.

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## Appendix A

## EMT-Paramedic Drug Therapy

0.45% sodium chloride	levalbuterol (Xopenex)
10% dextrose	lidocaine (Xylocaine)
5% dextrose in 0.45% sodium chloride	lorazepam (Ativan)
5% dextrose in LR	magnesium sulfate
5% dextrose in water (D5W)	Mark I Kit
activated charcoal	pralidoxime (2-Pam Chloride)
adenosine (Adenocard)	atropine
albuterol	Mark V Kit
amiodarone (Cordarone)	pralidoxime (2-Pam Chloride)
aspirin	atropine
atropine	diazepam (Valium)
calcium chloride	methylprednisolone (Solu-Medrol)
clopidogogrel (Plavix) - oral only	metoclopramide (Reglan)
cyanide antidote package (Cyanokit)	metoprolol (Lopressor)
amyl nitrate	midazolam (Versed)
sodium nitrate	morphine
sodium thiosulfate	nalbuphine (Nubain)
dexamethasone (Decadron)	naloxone (Narcan)
dextrose (50%, 25%, 10%)	nitroglycerin
diazepam (Valium)	paste
diltiazem (Cardizem)	spray
diphenhydramine (Benadryl)	tablets
dopamine	drip (w/pump only)
epinephrine	nitrous oxide
etomidate (Amidate)	normal saline (0.9% sodium chloride)
famotidine (Pepcid)	ondansetron (Zofran)
fentanyl (Sublimaze)	oxygen
flumazenil (Romazicon)	oxytocin (Pitocin)
furosemide (Lasix)	pancuronium (Pavulon)
glucagon	procainamide
glucose	prochlorperazine (Compazine)
haloperidol (Haldol)	rocuronium (Zemuron)
heparin (bolus only)	sodium bicarbonate
hydromorphone (Dilaudid)	succinylcholine (Anectine)
ipratropium (Atrovent)	terbutaline
ketamine (Ketalar)	vasopressin (Pitressin)
ketorolac (Toradol)	vecuronium (Norcuron)
lactated ringer's	ziprasidone (Geodon)

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[http://www.dhs.wisconsin.gov/ems/License\\_certification/Paramedic\\_Curriculum\\_Meds0611.pdf](http://www.dhs.wisconsin.gov/ems/License_certification/Paramedic_Curriculum_Meds0611.pdf)

Appendix B

WCTC Tuition Cost

**WCTC Fire and EMS Training**

Visit us on the world wide web at: <http://www.wctc.edu>

**Waukesha County Technical College**

**Regional Fire and EMS Training Center**

800 Main Street; S-232

Pewaukee, Wisconsin 53072

Phone: (262) 691-5541 Fax: (262) 691-7888

To: Fire Chiefs and Training Officers

From: WCTC Fire and EMS Training

Date: May 16, 2011

Re: 2011/12 Tuition and Fees

Effective June 1, 2011, the WTCS State Office has set tuition and fees for the following courses as follows:

	<b>2% Fire Dues Fund</b>	<b>Final Cost</b>
Firefighter I	\$307.44	\$76.86
Hazardous Materials Operations (Required for FF I Certification)	Full (\$89.68)	\$0.00
Firefighter II	Full (\$128.10)	\$0.00
Driver/Operator-Pumper	\$217.78	\$38.42
Driver/Operator-Aerial	Full (\$128.10)	\$0.00
Fire Officer I	\$171.78	\$55.92
Fire Officer II	Full (\$138.22)	\$0.00
Fire Instructor	None	\$115.85
Fire Inspector	Full (\$199.74)	\$0.00
2 Hour Workshop (Fire or EMS)		\$9.59
3 – 4 Hour Workshop (Fire or EMS)		\$15.19
6 Hour Workshop (Fire or EMS)		\$20.78
8 Hour Workshop (Fire or EMS)		\$26.37
Medical First Responder		\$149.41
Medical First Responder Refresher (24 hours)		\$74.91
EMT-Basic with CPR and Clinical <sup>2</sup>		\$571.29
EMT-Basic Refresher (30 hours)		\$93.64
EMT-Basic Flexible Refresher (6 hours)		\$20.78
EMT-Intermediate Technician <sup>2</sup>		\$387.55
EMT-Intermediate Technician Refresher (12 hours)		\$37.56
EMT-Paramedic (22-week or two-semester, 11 technical studies courses) <sup>3,4</sup>		\$4,316.60
EMT-Intermediate/Paramedic Refresher (48 hours)		\$149.82
AHA ACLS (includes book, pocket reference card and AHA ACLS provider card)		\$95.94
AHA ACLS EP (includes book, pocket reference card and AHA ACLS EP provider card)		\$90.56
AHA ACLS Recertification (includes book, pocket reference card and AHA ACLS provider card)		\$72.37
AHA PALS (includes book, pocket reference card and AHA PALS provider card)		\$98.44
AHA PALS Recertification (includes book, pocket reference card and AHA PALS provider card)		\$80.46
Tactical EMS		\$143.58

<sup>1</sup> Given recent changes to 2% dues funding through the WTCS System Office, actual State reimbursement amounts may be less than indicated. In such an instance, WCTC may bill fire departments for any difference between the state reimbursement amounts given above and actual reimbursement received from the State.

<sup>2</sup> Final cost is for tuition and fees only (per student); books, additional materials, and testing fees are not included (unless noted otherwise). Tuition and fees may be subject to a WCTC activity fee of \$6.70 per credit if the course is offered on-campus.

<sup>3</sup> Students attending these courses are required to meet certain health care requirements before being allowed to participate in clinical experiences, which may result in additional expenses (please see below for more information). The cost listed also includes mandatory insurance coverage for practicum attendance (\$13 per semester).

**WCTC Fire and EMS Training**

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<sup>4</sup> Amount reflects 11 technical studies courses (36 credits) required for National Registry testing and WI licensure along with the student activity fees associated with those courses. Upon completion of these courses, students wishing to obtain their Paramedic Technician Associate Degree are required to complete an additional 30 credits of general education courses.

Effective June 1, 2011, testing and other additional fees are as follows:

	<b>2% Fire Dues Fund</b>	<b>Final Cost</b>
State of Wisconsin Fire Service Certification: Testing		\$80.00
First Responder: NREMT Written Testing <sup>6</sup>		\$65.00
EMT-Basic: Practical		\$115.00
EMT-Basic: Practical Testing (Individual Station Retest)		\$25.00
EMT-Basic: NREMT Written Testing <sup>6</sup>		\$75.00
EMT-Intermediate Technician: State of Wisconsin Written <sup>7</sup>		\$35.00
EMT-Intermediate Technician: State of Wisconsin Practical		\$105.00
EMT-Intermediate Technician: State of Wisconsin Practical Testing (Individual Station Retest)		\$25.00
EMT-Intermediate or EMT-Paramedic: Practical Testing		\$250.00
EMT-Intermediate or EMT-Paramedic: Practical Testing (Individual Station Retest)		\$55.00
EMT-Intermediate: NREMT Written Testing <sup>6</sup>		\$100.00
EMT-Paramedic: NREMT Written Testing <sup>6</sup>		\$110.00

<sup>5</sup> Fee is per student for full examinations and per student per station for practical retests. Fees not payable to external agencies (NREMT/PearsonVue) may be billed to individual fire departments and services.

<sup>6</sup> Fees as indicated are to be paid directly to NREMT/PearsonVue Testing Centers by individual students and are subject to change.

<sup>7</sup> Fees as indicated are to be paid directly to I/O Solutions by individual students with a credit or debit card at the time of the test (online) and are subject to change.

## Appendix C

## EMT-Intermediate Drug Therapy

Activated Charcoal*	Albuterol (Nebulized – Unit Dose)
Aspirin (ASA) for chest pain	Atrovent (Nebulized – Unit Dose)*
Dextrose 50%	Epinephrine Auto-Injector or Manually** drawn 1:1000
Glucagon*	Mark I (or equivalent) Auto-Injector (For Self & Crew)
Narcan	Nitroglycerin (SL only)
Oral Glucose	Other short-acting beta agonist for asthma (nebulized – unit dose)**

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TRANSITIONING BASIC LIFE SUPPORT SYSTEM

Appendix D

2008 and 2009 Ambulance Budget

CITY OF PEWAUKEE  
2009 BUDGET  
GENERAL FUND EXPENDITURES

	2007 Actual	2008			2008 Budget	2009 Budget	% Change	COMMENTS
		3 Month Actual	9 Month Estimate	Year End Forecast				
100- 522300- 2440 Vehicle Repairs & Maintenance	43,940	4,775	35,225	40,000	36,995	40,000	8%	
100- 522300- 2980 Training	5,643	906	3,769	4,675	4,675	4,675	0%	
100- 522300- 3400 Operating Supplies	6,891	1,266	4,734	6,000	6,000	5,000	-17%	
100- 522300- 3410 Uniforms	6,940	1,139	8,861	10,000	10,000	20,000	100%	Uniform Allow start in 2010
100- 522300- 3420 Fuel	16,383	4,294	16,091	20,385	20,385	25,000	23%	
100- 522300- 3950 New Equipment	3,972	3,290	4,490	7,780	7,780	53,000	581%	Pagers, headsets, glass masters and \$45K for Turn out gear
100- 522300- 5110 Worker's Compensation	23,665	11,587	16,413	26,000	30,000	30,000	0%	
100- 522300- 5120 Property & Liability Insurance	30,877	19,806	12,914	32,720	32,000	35,000	13%	
Total Fire Suppression	834,484	210,035	731,587	941,622	932,042	1,446,748	55.22%	
Fire Inspection								
100- 522500- 1100 Wages	108,448	24,843	86,603	111,446	111,446	126,960	14%	ADD 500hrs to Div Chief Positions and Adjust Asst. chief
100- 522500- 1150 Part-time Wages	4,000	703	4,067	4,770	4,770	7,114	49%	Increase PT for tank inspections 275 hours to 400 hours
100- 522500- 1300 Social Security	8,569	1,946	6,945	8,891	8,891	10,256	15%	
100- 522500- 1310 Health Insurance	7,631	2,172	6,878	9,050	9,050	16,740	85%	Estimated 20% Increase in Premium (1 ee S to E/S)
100- 522500- 1320 Dental Insurance	249	144	432	576	576	1,200	108%	1 ee S to F
100- 522500- 1330 Optical Insurance	218	72	216	288	288	288	0%	
100- 522500- 1340 Life Insurance	373	124	200	324	374	413	10%	
100- 522500- 1350 Disability Insurance	877	292	436	728	879	1,006	14%	
100- 522500- 1360 Pension	11,418	2,360	10,424	12,784	12,784	14,748	15%	
100- 522500- 2980 Training	387	431	(431)	-	-	-	0%	
100- 522500- ### New Equipment	1,172	-	-	-	-	-	0%	
Total Fire Inspection	143,352	33,087	115,770	148,857	149,058	176,725	16.9%	
Total Fire Services	1,416,524	438,724	1,176,751	1,615,475	1,601,149	2,249,901	40.5%	
Ambulance								
100- 523000- 1100 Wages	65,874	15,346	52,245	67,591	67,591	75,911	12%	ADD 500hrs to Div Chief Positions and Adjust Asst. chief
100- 523000- 1150 Part-time POC Wages	-	-	50,000	50,000	50,000	100,000	100%	Flat Rate Program
100- 523000- 1230 Ambulance Runs POC	37,381	10,517	24,083	34,600	34,600	34,600	0%	
100- 523000- Paramedic Runs-Delafield	-	-	-	-	-	150,000	100%	New Paramedic Program with Delafield - \$400 per run
100- 523000- 1250 Training Wages POC	3,554	13	8,217	8,230	8,230	8,230	0%	
100- 523000- 1300 Social Security	8,096	1,958	10,315	12,273	12,273	16,734	36%	
100- 523000- 1310 Health Insurance	8,171	2,328	11,064	13,392	13,392	11,147	-17%	Estimated 20% Increase in Premium
100- 523000- 1320 Dental Insurance	634	228	884	912	912	866	-5%	
100- 523000- 1330 Optical Insurance	109	36	106	144	144	144	0%	
100- 523000- 1340 Life Insurance	204	68	142	210	205	229	12%	
100- 523000- 1350 Disability Insurance	492	164	343	507	492	569	16%	
100- 523000- 1360 Pension	7,210	1,421	6,014	7,435	7,435	8,350	12%	
100- 523000- 2430 Equipment Repairs & Maintenance	3,232	-	3,150	3,150	3,150	9,500	202%	Maintain 10 yr ambulances
100- 523000- 2440 Vehicle Repairs & Maintenance	5,483	2,363	4,637	7,000	4,000	15,000	275%	
100- 523000- 2980 Training	10,178	3,352	7,648	11,000	15,220	15,220	0%	EMT recertification, IV tech, and new recruit EMT basic
100- 523000- 3400 Operating Supplies	23,896	5,548	19,932	25,460	25,460	26,000	14%	
100- 523000- 3420 Fuel	10,353	2,815	10,285	13,100	13,100	17,000	30%	
100- 523000- 3950 New Equipment	-	-	-	-	-	3,000	0%	
Total Ambulance Operations	184,657	46,157	208,667	255,024	256,224	495,500	93.4%	
Ambulance Capital Expenses								
100- 572300- 8100 Capital Expenses	151,109	-	8,000	8,000	8,225	170,000	1967%	Increase Ambulance rates to cover cost of new ambulance
Total Ambulance Services	335,976	46,157	216,667	263,024	264,449	685,500	152%	
Total Fire & Ambulance Services	1,752,600	484,881	1,390,618	1,878,469	1,865,568	2,915,401	56.3%	

Appendix E

2010 Ambulance Budget

Date:2/9/2010

CURRENT YEAR BUDGET REPORT

Page: 15

For 1/1/2010 To 1/31/2010

	Current Period	Current YTD	2010 Budget	Balance Remaining	Percent Remaining
<b><u>Ambulance</u></b>					
Ambulance – Wages	\$4,796.57	\$4,796.57	\$75,911.00	\$71,114.43	93.68%
Ambulance - Part-time POC Wages	1,760.16	1,760.16	191,050.00	189,289.84	99.08
Ambulance - Ambulance Runs POC	3,149.51	3,149.51	57,211.00	54,061.49	94.50
Ambulance - Training Wages POC	514.86	514.86	14,707.00	14,192.14	96.50
Ambulance - Social Security	774.21	774.21	25,924.00	25,149.79	97.01
Ambulance - Health Insurance	0.00	0.00	9,521.00	9,521.00	100.00
Ambulance - Dental Insurance	0.00	0.00	866.00	866.00	100.00
Ambulance - Optical Insurance	0.00	0.00	144.00	144.00	100.00
Ambulance - Life Insurance	14.56	14.56	229.00	214.44	93.64
Ambulance - Disability Insurance	25.94	25.94	569.00	543.06	95.44
Ambulance - Pension	642.32	642.32	8,350.00	7,707.68	92.31
Ambulance - Paramedic Runs –					
Delafield	0.00	0.00	110,000.00	110,000.00	100.00
Ambulance - Equip Repair & Maint	0.00	0.00	7,500.00	7,500.00	100.00
Ambulance - Vehicle Repair &					
Maint	0.00	0.00	13,000.00	13,000.00	100.00
Ambulance - Training	0.00	0.00	30,000.00	30,000.00	100.00

TRANSITIONING BASIC LIFE SUPPORT SYSTEM

Date:2/9/2010

CURRENT YEAR BUDGET REPORT

Page: 16

For 1/1/2010 To 1/31/2010

	Current	Current	2010	Balance	Percent
	Period	YTD	Budget	Remaining	Remaining
Ambulance - Operating Supplies	125.21	125.21	29,870.00	29,744.79	99.58
Ambulance - Fuel	896.16	896.16	16,080.00	15,183.84	94.43
Ambulance - New Equipment	0.00	0.00	4,000.00	4,000.00	100.00
Ambulance - Capital Equipment	0.00	0.00	0.00	0.00	0.00
<hr/>					
Total Ambulance	\$12,699.50	\$12,699.50	\$594,932.00	\$582,232.50	97.87%

Appendix F

Initial Cost of Paramedic Supplies and Medications

Adenosine 6mg Prefilled Syringe		10.80 per vial or 20.04 per syringe	PFD Need 10 vials	Total 108.00
Adenosine 12mg Prefilled Syringe		26.48 per vial or 32.16 per syringe	10 vials	264.8
Albuterol 2.5mg		4.12 for box of 26		
Amlodaron 150mg		1.08 per vial or 8.20 per syringe	5 vials	5.3
Asprin 81mg Chewable		2.26 per bottle		
Atropine 1mg Syringe		3.62 eaoh	10	36.2
Atrovent 0.5mg		4.08 for box of 26		
Benadryl 50mg		0.78 per vial or 1.20 per syringe	10 vials	7.8
Calcium Chloride 1000mg		2.78 eaoh	5	13.8
Cardizem 25mg		1.28 (vial only)	10	12.9
Dextrose 50% (25gram)		4.78 eaoh		
Epi 1:1000 1mg Ampule		1.07 eaoh		
Epi 1:10,000 1mg (Cardiac)		2.78 eaoh	32	88.32
Epi 1:10,000 30mg Vial		8.82 eaoh		
Epi Pen Jr 0.15mg/ml Auto-Injector		72.36 eaoh		
Epi Pen Adult 0.3mg/ml Auto-Injector		72.36 eaoh		
Etomidate 40mg		11.72 eaoh (vial only)		
Glucogen 1mg/ml box (must be mixed)		89.12 per vial		
Glucagon 1mg/ml kit		128.62 eaoh		
Geodon		14.72 eaoh	10	147.2
Lidocaine 2% 100mg		3.32 eaoh	5	16.6
Magnesium Sulfate 5 grams		0.88 eaoh	5	4.4
Nitro .4mg Spray (200 doses)		188.28 eaoh		
Nitro .4mg Tablets		3.81 for box of 4 bottles		
Narcan 4mg		31.78per vial		
Reglan 10mg/2ml		8.68 per box of 26 vials	1 box	9.56
Procainamide 1000mg		8.40 per vial	10	84.00
Romazicon 1mg		4.80 per vial	5	24.50
Sodium Bicarb 8.4% 50meq		2.70 eaoh	10	27.00
Solu-Medrol 125 mg		3.27 per vial	5	16.35
Succinylcholine 200mg		2.70 per vial	5	13.50
Thiamine 100mg		11.88 per vial	5	57.9
Vasopressin 20 units		6.03 per vial	5	25.15
Vecuronium 10mg		8.70per vial	5	33.5
Zofan 4mg (generic)		0.40 per vial	5	2.00
<b>PREMIXED DRIPS</b>				
Dopamine 1600mcg/cc 250cc		7.33 per bag	5	36.65
Lidocaine 4mg/cc 250cc		4.21 per bag	5	21.05
Nitro 50mg/250cc		4.74 per Glass Bottle	5	23.7
Normal Saline 1000ml/bags	of 12 bags	11.74 per case		
Normal Saline 500ml/bags	of 24 bags	21.37 per case		
Stylet Intubation 2.4-4.5		2.86 eaoh	15	44.25
Tube Trac Cu#6.0 mm		33.61 eaoh	5	167.55
Tube Trac Cu#7.0 mm		24.20 eaoh	5	121
Tube Trac Cu#8.0 mm		24.20 eaoh	5	121
Tube Trac Cu#9.0 mm		28.98 eaoh	5	131.8
Tube Trac Cu#10.0 mm		24.20 eaoh	5	121
Blade Scalpel		.86 eaoh	5	3.25
Surgical Glove		1.62 per pair	10	15.2
ET Tube Magill 4.0		.88 eaoh	10	9.5
ET Tube Magill 4.5		.88 eaoh	10	9.8
ET Tube Magill 5.0		.88 eaoh	10	9.8
ET Tube Magill 5.5		.86 eaoh	10	9.5
Air-Q's 4.5		18.86 eaoh	3	59.85
Air-Q's 3.5		18.86 eaoh	3	59.85
Blood tubing		8.78 eaoh	6	40.74
Bugle's Adult		84.88 per box	2	129.38
Disposable Infant/peds/adult SPO2 sensors		125.00 per box	1	125
End tidal CO2 - nasal monitor/ET tube		130.00 per box	1	130
ET - CO2 detector caps Adult		10.84 eaoh	6	65.64
ET tubes 5.0 - Stylette		38.00 per box	1	36
ET tubes 5.5 - Stylette		38.00 per box	1	36
ET tubes 6.0 - Stylette		38.00 per box	1	36
ET tubes 6.5 - Stylette		38.00 per box	1	36
ET tubes 7.0 - Stylette		38.00 per box	1	36
ET tubes 7.5 - Stylette		38.00 per box	1	36
ET tubes 8.0 - Stylette		38.00 per box	1	36
ET tubes 8.5 - Stylette		38.00 per box	1	36
IV Pump Tubing		26.00 eaoh	4	100
Jumpkits		49.88 eaoh	6	299.94
Pressure Infuser		20.86 eaoh	3	62.85
Ranger Glide Scope		8,177eaoh	2	18354
IV Pumps		100.00 eaoh	4	400
			<b>Total Cost</b>	<b>21655.88</b>

## Appendix G

## Paramedic Renewal Requirements

Paramedic Refresher training requirements must be completed every two years from the time the paramedic receives their paramedic license. A total of 48 hours of continuing education must be obtained in the two year cycle. The paramedic may choose to attend a formal 48 hour refresher training through an approved teaching agency such as a technical college. The paramedic may also track their training hours during the two year cycle to meet the 48 hour requirement. Below are the topics required to be trained in and the minimum number of hours the paramedic must obtain in each topic.

Advanced medical assessment – 4 hours

Advanced trauma assessment – 4 hours

Airway – 2 hours

Pharmacology – 2 hours

Venous access and medication administration – 2 hours

Cardiology – 2 hours

12 lead interpretation – 1 hour

OB – 1 hour

Operations – 2 hours

WMD/Preparedness – 2 hours

Flexible content – 18 hours

Pediatric medical/trauma assessment and treatment – 8 hours

Retrieved and reformatted from

[http://www.dhs.wisconsin.gov/ems/Training\\_education/retrainingrequirements.htm](http://www.dhs.wisconsin.gov/ems/Training_education/retrainingrequirements.htm)

Appendix H

Table H1 PFD Current Staffing Roster

Pewaukee Fire Department Staffing Roster 2011													
	Station One Nights			Shift Extra			Station Two Nights			Day Crew			
Black A	0895	Huzjak*	F/E				0806	Frederick	A/I	0671	Semm	A/I	
	0950	McAuliffe	F/B				0968	Witzel	F/●	0684	Jay	M	
				Black Shift			0963	M. Burg*	F/I	0697	Ballenger	A/I	
										0728	Benson	A/P	
Black B	0948	Island	F/E				0935	Levenhagen	F/P	0793	Barbian	F/P	
	0930	L. Babe*	F/I				0954	Uciechowski	F/E	0819	Ryan	F/P	
							0551	Dobersek	M/I	0879	Buckingham	F/I	
										0914	Schulz	F/I	
Red A	0955	Jalalian	F/				0739	S. Rohde	M/I	0927	Kuhs	F/I	
	942	Ziegler	F/I					Robarge	F/E	0929	Zimmerman	F/I	
				Red Shift						0937	Mercado	F/E	
										0969	Plato	F/E	
Red B	0925	Pabelick	F/E				0782	Butzlaff	F/I	0970	Gluth	F/I	
	0952	Reilly	F/E				0967	Balzer	F/E	0972	Dacenko	F/I	
							0983	Lovelace	F/E	0974	Lofy	F/E	
										0977	Werlein	F/E	
Green A	0957	E. Burg	M/E				0939	Mersenski	M/P	0979	Rayborn		
	0964	MacLaughlin	F/B				0965	Mindiola	F/●	0980	Wood		
				Green Shift						0981	Malueg		
Green B	0958	Wachtl	F/I				0910	Gannon	M/E				
	0975	Hayes	F/●				0976	Weber	▲				
On leave	0960	Olig	F/E				0982	Adams	F/E				
												Aqua = New Recruits 12/10	
												Green = New Recruits 11/10	
												Dark Red = New Recruits 12/09	
												Orange = New Recruits 2/10	
												Brown = New Recruits 5/10	
												Purple = New Recruits 7/10	
E = EMT-Basic	A = Aerial Operator		▲ = In Firefighter 1 8/10										
I = IV Tech	M = Engine Operator		● = In EMT-Basic 8/10										
P = Paramedic	F = Firefighter		* = In Paramedic 01/11										
	Rhode		Friedel									Norris	
Black St. 1	0589	Hagen	A/I	Red St. 1	0768	Argue	M/I			Green St. 1	0633	McCartney	A/P
	0916	Videkovitch	A/P		0860	Grosnitz	A/P				0829	Bobrowitz	A/E
	0789	Hendry	A/I		0903	Schneider	A/I				0803	Misiak	A/I
Black St. 2	0577	Bruchert	A/I	Red St. 2	0579	Derusha	A/I			Green St. 2	0607	Sherman	M/P
	0783	Hetherington	M/I		0796	Pierson	M/I				0845	Delaney	A/I

Table H2 Paid-On-Premise Schedule

PEWAUKEE FIRE DEPARTMENT																															
Shift Schedule 2011																															
Month / Date	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
January	B	A	A	A	B	B	B	A	A	A	B	B	B	A	A	A	B	B	B	A	A	A	B	B	B	A	A	A	B	B	B
February	A	A	A	B	B	B	A	A	A	B	B	B	A	A	A	B	B	A	A	A	A	B	B	B	A	A	A	B			
March	B	B	A	A	A	B	B	B	A	A	A	B	B	B	A	A	A	B	B	B	A	A	A	B	B	B	A	A	A	B	B
April	B	A	A	A	B	B	B	A	A	A	B	B	B	A	A	A	B	B	B	A	A	A	B	B	B	A	A	A	B	B	
May	B	A	A	A	B	B	B	A	A	A	B	B	B	A	A	A	B	B	B	A	A	A	B	B	B	A	A	A	B	B	
June	A	A	A	B	B	B	A	A	A	B	B	B	A	A	A	B	B	B	A	A	A	B	B	B	A	A	A	B	B		
July	A	A	A	B	B	B	A	A	A	B	B	B	A	A	A	B	B	B	A	A	A	B	B	B	A	A	A	B	B		
August	A	A	B	B	B	A	A	A	B	B	B	A	A	A	B	B	B	A	A	A	B	B	B	A	A	A	B	B	B		
September	A	B	B	B	A	A	A	B	B	B	A	A	A	B	B	B	A	A	A	B	B	B	A	A	A	B	B	B	A	A	
October	A	B	B	B	A	A	A	B	B	B	A	A	A	B	B	B	A	A	A	B	B	B	A	A	A	B	B	B	A	A	
November	B	B	B	A	A	A	B	B	B	B	A	A	B	B	B	A	A	A	B	B	B	A	A	A	B	B	B	A	A	A	
December	B	B	B	A	A	A	B	B	B	A	A	A	B	B	B	A	A	A	B	B	B	A	A	A	B	B	B	A	A	A	
Jan-12	B	B	A	A	A	B	B	B	A	A	A	B	B	B	A	A	A	B	B	B	A	A	A	B	B	B	A	A	A	B	

  

DC Norris	<span style="background-color: #90EE90; border: 1px solid black; display: inline-block; width: 15px; height: 10px;"></span> Green Shift
DC Friedel	<span style="background-color: #FF0000; border: 1px solid black; display: inline-block; width: 15px; height: 10px;"></span> Red Shift
DC Rohde	<span style="background-color: #FFFFFF; border: 1px solid black; display: inline-block; width: 15px; height: 10px;"></span> Black Shift

