



## **ALMONT ASSOCIATES**

We Specialize in Fire, Police, EMS & Emergency Management Assistance

# The Final Emergency Communications Report for City of Paducah & McCracken County of the Paducah/McCracken E911 Center

March 2014



6092 Sabal Hammock Circle Port Orange, FL 32128-7070

386-341-0596 / tom@almontassociates.com

[www.almontassociates.com](http://www.almontassociates.com)

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## **ALMONT ASSOCIATES**

March 19, 2014

Mr. Jeff Pedersen, City Manager  
City of Paducah  
300 South 5<sup>th</sup> Street  
Paducah, KY 42003

Reference: Emergency Communications Report

Dear Mr. Pedersen:

Almont Associates presents this Final version of the Emergency Communication Report for the City of Paducah and McCracken County. The staffs of center and associated agencies were professional and cooperative. They provided information that assisted us with this analysis of the current delivery system and helped guide Almont to the conclusions for the best model of service delivery into the future.

We were able to obtain a clear understanding of the community picture and their desires for public safety and the services provided. The following report makes recommendations for the appropriate organizational and operational structure necessary to comply with industry-wide benchmarks and nationally recognized standards and to provide each participating agency with the support it needs to accomplish its respective mission. The report addresses and make recommendations on 1) Operational Design and Organizational Development that includes appropriate Staffing Models, review and make recommendations on the 2) Governance Structure, review and make recommendations on 3) Technology and information exchange and lastly, address 4) Other items discovered during the course of the review.

Almont Associates is prepared to provide a presentation on the report and look forward to working with you during implementation.

Sincerely;

*Thomas G. Weber*

Thomas G. Weber  
President

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## Executive Summary

Almont Associates was engaged through a Request for Proposals to develop an Emergency Communications Report. The report makes recommendations for the appropriate organizational and operational structure to comply with industry benchmarks and nationally recognized standards and to provide support for various participating emergency response agencies. Specifically, the report addresses 1) Operational design and organizational development that includes two staffing models, 2) Governance structure, 3) Technology and information exchange and, 4) Other items discovered during the course of a site visit and follow up discussion with various stakeholders and extensive data review. Specifically, an economic model was developed to assist the board with developing and implementing a five year master plan to include capital replacement and funding alternatives.

Total incoming phone calls to the center have declined steadily since 2007, driven primarily by annual decreases in non-emergency calls, but the number of E911 calls has increased creating a greater telecommunicator workload. The largest percentage of incidents logged by the center is self-dispatched calls which do not require the level of resources that E911-sourced calls require. Atypical of many E911 communications centers in the nation, the Paducah-McCracken E911 center dispatches for the county animal control agency; an annual workload rivaling that of the Paducah fire department and exceeding that of the county fire departments. Almont recommends discontinuing this practice to add telecommunicator capacity to the center.

A significant data point used to justify the need for additional telecommunicators is an ISO evaluation of the West McCracken CO FD based upon outdated methodology (2007 grading schedule). Almont recommends using NFPA 1221 (as does the most recent ISO grading schedule adopted in 2013) which provides a metrics-based approach to communications center staffing. If the center meets those metrics (call answering and processing time) then ISO should consider the center as adequately staffed. A reconfiguration of existing staff resources as shown in Model One or the consolidation with Mercy Regional Ambulance dispatch as shown in Model Two should provide more than adequate resources to handle existing and future workload for the next several years. While the ISO study did raise communications center staffing as an issue, the study should not be used to justify a staffing model.

The largest contributors to center incident volume are the Paducah police department and the McCracken County Sheriff's office. Most law incidents are self-dispatched however, requiring little to no telecommunicator support. The Paducah PD volume is increasing while that for McCracken Sheriff is declining. This trend is reflected in the partner funding split, part of which is workload based. Fire department incidents are increasing, likely reflecting an increase in EMS related calls. Since fire departments and ambulance agencies both respond to many of the same calls, integration of Mercy EMS dispatch and the center would leverage resources and provide more depth with reduced, combined costs. Based upon positive feedback from the

Mercy Regional ambulance service director, Almont recommends that the board consider moving forward with Model Two.

Total annual revenues have been declining since 2007, driven by the rapidly declining proportion of landline to cellular phones in use. Although CMRS revenue for cellular phones has increased through time, it has not kept pace with decreased revenue from local charges on landlines and increased center expenditures. The interlocal agreement calls for landline charges to be increased when revenues fund less than 50% of expenditures; a point reached in 2011. Increases in a diminishing revenue base will not keep pace with expenditures in any case. Even with no addition of staff, the current trend of declining revenue versus increasing expense is not sustainable without significant infusion of funds from the financial partners. Further, no long-term master plan to include capital replacement or improvements exists.

An economic model is provided that illustrates how a capital funding program could be built around a reconfigured center using existing staff minus the assistant director position, or a reconfigured center integrated with staff from the Mercy ambulance dispatch operation were it to be consolidated with the center. Further, an alternative funding mechanism (per parcel assessment methodology) is postulated that is currently in use in another Kentucky county which could either augment the current revenue sources to bring the revenue back in line with the 50% guideline or totally replace the current funding sources which may be a better option in the long-term; particularly in the case of Model Two.

Similar capital needs have been identified by both board members and center staff. The current building is at or very near capacity and not ideally configured, but would require significant funding to replace with either a new or remodeled existing building. This should be a longer term goal (5-10 years) with minor renovation of the existing building funded in the near-term. At a minimum, exterior carded access to fenced, lighted parking is needed. Interior renovation such as new carpet, painting and some room reconfiguration is recommended. The CAD system needs to be upgraded to the most recent, web-based version and the phone system will need to be replaced within 3-5 years. Both models presented for board consideration provide varying capacity for annual capital replacement and/or one-time projects.

Although the current board is collegial and functions well together, its size makes it cumbersome and the major goal of its composition (law enforcement heavy due to LINK/NCIC contractual requirement) could be accomplished with a smaller board. Further, in order to accommodate an EMS dispatch integration, Almont recommends a new board configured with no more than seven members; the McCracken County Sheriff or designee, a county fire department representative designated by the fiscal court, the Paducah police and fire chiefs, the Kentucky State Police post commander, the Commonwealth Attorney and the director of Mercy Regional Ambulance Service.

Many board members felt it would be beneficial for either Paducah or McCracken County to integrate the center into its structure. Since the city already provides most of the finance,

human resource and other support for the center and most board members already feel as though the center essentially functions as a city department, Almont recommends that the center become a full city department with the director reporting to the city manager. This would alleviate stated concerns about who is liable for any adverse personnel or other actions arising out of human resource or operational problems. The city manager should utilize the board in an executive search and for a hiring recommendation for a new director and should consider any recommendation to terminate the director for cause by majority vote of the board.

Several other recommendations are provided on governance but agreements with various users of the center should focus on ensuring proper customer service while leaving day-to-day administrative functions to the director as an employee of the city manager whose staff and operations function under the city HR manual and follow all appropriate policies and procedures as any other established department.

## 1.0 Background

### 1.1 Paducah/McCracken County Community

Paducah, Kentucky is the county seat of McCracken County and is located on the southern bank of the Ohio River in far western Kentucky at the beginning of the Tennessee River. Paducah is the largest city in McCracken County as well as the surrounding 15-county region. The Paducah market has established itself as the cultural, economic, medical, retail, and hospitality center for the regional population base of well over 250,000 in the western Kentucky, southern Illinois, northwest Tennessee, and southwest Missouri region. Paducah is the most significant inland port in the United States and is home to 18 towing companies, which makes it the hub of the inland waterway system.

Paducah's population is 25,048 and the total McCracken County population is 65,549. However, as a regional activity hub and service center, Paducah's daytime population is considerably greater than its 25,048 residents. McCracken County covers an area of 251 square miles.

### 1.2 Paducah-McCracken County E911 Communications Center

The City of Paducah and McCracken County first entered into an interlocal cooperation agreement providing for a consolidated 911 emergency communication service for all City and County residents in May of 1991. This agreement has subsequently been modified several times; in July of 1994, in August of 2001, in April of 2003, in December of 2007, and with the latest revision taking effect on April 8, 2009. The initial term of the latest revision ran through June 30, 2010 with automatic annual renewals unless either party provided an advance six month notice in writing to the other.

The agreement spells out in detail how the Paducah/McCracken County E911 Emergency Communications Center is funded between the financial partners (city and county), staffing, budgetary process, and other issues including how it is to be governed by an eleven (11) member board. The Paducah-McCracken County Emergency Communication Service Board is ex-officio with the exception of two local elected commissioners and a rural fire chief as noted below. The members are as follows:

1. McCracken County Sheriff Jon Hayden or departmental designee;
2. Paducah Police Chief Brandon Barnhill or departmental designee;
3. Kentucky State Police Post Commander Captain Nathan Kent or designee;
4. McCracken County Coroner Dan Sims;
5. McCracken County Disaster and Emergency Services (DES) Emergency Manager or designee;
6. McCracken County Jailer Bill Adams;
7. Commonwealth Attorney for McCracken County Dan Boaz or designated Assistant Commonwealth Attorney;
8. Paducah City Commissioner Carol Gault (appointed by the mayor);

9. McCracken County Commissioner Jerry Beyer (appointed by the county judge/executive);
10. Paducah Fire Chief Steve Kyle or departmental designee; and
11. Donald Elrod, a county fire district chief (West McCracken VFD) appointed by the county judge/executive.

The Paducah-McCracken County E911 Emergency Communications Center is the primary Public Safety Answering Point (PSAP) providing 911 emergency and non-emergency services to the 65,549 residents and visitors within McCracken County's 251 square miles. The center also provides addressing services countywide and receives calls via 911 and many non-emergency telephone numbers for all law enforcement, fire, medical, and rescue services located within McCracken County. In addition, the center also dispatches the county's animal control services. Medical calls are answered and forwarded to a secondary PSAP, Mercy Regional Ambulance EMS dispatch which then dispatches its own ambulances to E911 calls. These calls are then monitored by a telecommunicator to determine if additional resources are needed from any of the participating agencies. The center is a 24/7 operation staffed with 23 dedicated professionals. The director position is currently vacant. The center receives approximately 150,000 combined telephone calls annually, about one third of which are E911 calls with incremental annual increases. The center also handles approximately 80,000 incidents annually with about 15,000 resulting from E911 calls.

### **1.3 Consultant Engagement**

The Board has contracted with Almont Associates through a Request for Proposals to develop an Emergency Communications Report. Changes within the emergency communications industry and leadership turnover in the emergency communications center among other issues have led the Board to seek professional assistance in conducting an analysis of the current operations including analysis of the current service levels provided. The following report makes recommendations for the appropriate organizational and operational structure necessary to comply with industry-wide benchmarks and nationally recognized standards and to provide each participating agency with the support it needs to accomplish its respective mission. The report will address and make recommendations on 1) Operational Design and Organizational Development that includes appropriate Staffing Models, review and make recommendations on the 2) Governance Structure, review and make recommendations on 3) Technology and information exchange and lastly, address 4) Other items discovered during the course of the review.

The study included a site visit by Karl Oltz and Stuart McElhaney on December 8-10, 2013 following review of board supplied information. During the site visit, Oltz reviewed technical and organizational aspects of the agency while McElhaney interviewed nine of the eleven board members. The McCracken County DES Manager position is currently unfilled and West McCracken VFD Chief Elrod was unavailable but did provide a written statement of items for Almont to consider. In addition, McElhaney also interviewed Paducah City Manager Jeff

Pederson, McCracken County Judge/Executive Van Newberry, Paducah Human Resources Director Cindy Medford, and City Controller Audra Herndon. Oltz and McElhane also met with Mercy Regional EMS Director James Locke. Follow up telephone interviews were conducted with selected staff including E911 Center Assistant Director Brent Stringer. Written summaries of Center employee interviews conducted by Paducah Fire Chief and Board Chairman Steve Kyle were available for review along with considerable data on the center.

## **1.4 Definitions**

In order to make this Emergency Communications Report and its recommendations more readily understandable by the public and elected officials who may not be familiar with acronyms and terms commonly used in the public safety communications field, the following definitions are provided to assist the reader.

- 1) CAD – Computer-Aided Dispatch. Typically involves the use of commercially available software and hardware designed to assist an agency in processing, tracking and recording various types of data about E911 calls for service and ensuring that the appropriate emergency response units are sent to mitigate those calls.
- 2) Calltaker – An individual assigned to a communications center and whose primary responsibility is to answer E911 calls for service as the initial point of contact for someone with an emergency. Their role is to determine type of emergency (fire rescue, law and/or emergency medical) as well as to verify the address and obtain other initial information from the caller prior to handing the caller off to a telecommunicator.
- 3) CMRS – Commercial Mobile Radio Service or more commonly known as cellular telephone service. The Kentucky legislature has identified the CMRS board as the state agency whose responsibility it is to collect a CMRS fee that is then distributed to various city, county or other E911 centers throughout the state.
- 4) EFD/EMD/EPD – Emergency Fire Dispatch/Emergency Medical Dispatch/Emergency Police Dispatch are a standardized set of commercially available protocols for the processing of E911 calls. These are typically modified by a local jurisdiction to conform with local emergency response agency incident response protocols and ensure uniform collection of E911 data and dispatch of appropriate units to a call regardless of who dispatches the units and their respective experience level.
- 5) EM – Emergency Management. For the purposes of this report refers to the McCracken County Emergency Management director or department.
- 6) FTE – Full Time Equivalent is a regular employee working for an agency who annually receives a set compensation package including salary and benefits.

- 7) ISO – Insurance Services Office is an independent non-governmental agency that evaluates fire protection in communities across the United States and applies a Property Protection Class (PPC) designation from 1-10 (with 1 being the best and 10 being no effective fire protection) to the respective community under review. The PPC is comprised of three parts; the fire department (50% of PPC score), the water supply system (40% of the PPC score) and communications system (10% of score). Communications center staffing represents 3% of the total PPC (4% under the new ISO rating schedule adopted in 2013). Fire insurance providers may, but do not have to, use the PPC designation to apply annual fire insurance premiums to various property types. In order for a property to receive the benefits of a rating, it must be within five road miles of the closest credited fire station
- 8) LINK/NCIC/NLETS – Law enforcement Information Network of Kentucky/National Crime Information Center/National Law Enforcement Telecommunications System. This is a system of state and national law enforcement databases accessed by law enforcement dispatch centers through a contractual relationship which tightly governs access through specific policies and procedures. Information from these databases is used to perform various background checks in order to assist in the identification and apprehension of criminals or potential lawbreakers.
- 9) 911 Incident or Call – An emergency situation typically arising from a landline or cellular telephone call made to an E911 center. The telecommunicator dispatches the appropriate emergency response agency(ies) and units after determining the location and nature of the emergency. A 911 incident may also arise through direct observation or involvement by emergency response units in the field. Emergency responders interact with telecommunicators throughout the incident via radio.
- 10) PSAP – Public Safety Answering Point is the location where an E911 call is either initially received and/or subsequently processed. The primary PSAP for Paducah/McCracken County is the communications center which is the subject of this report and all E911 calls in the county are received and routed through this center. Mercy Ambulance operates a secondary PSAP which may receive calls via a one-button transfer from the Paducah-McCracken County center if EMS resources are needed for a medical response.
- 11) Self-Dispatched Incident or Call – An emergency or non-emergency situation which does not originate with an E911 call to the communications center. These are typically law enforcement situations but may originate from any associated agency. Examples include traffic stops, well-being or security checks, walk-in medical cases at fire stations, etc. where the emergency response agency unit initiates the incident by contacting the telecommunicator via radio.
- 12) SO – Sheriff’s Office. In this case, the McCracken County Sheriff’s Office.

- 13) TAC Operator - Terminal Agency Coordinator is the agency position responsible for ensuring compliance with the contract between the agency and the state. More specifically, the TAC ensures departmental compliance with policies and procedures governing agency use and access to the LINK/NCIC/NLETS databases and system.
- 14) Telecommunicator – more commonly known as a dispatcher. This position receives information from the calltaker and sends the appropriate emergency response units to mitigate the emergency.

## **2.0 Current Situation**

### **2.1 Board Member Interviews**

#### **2.1.1 Management/Personnel Issues**

There was considerable discussion by board members about management of center employees; particularly from the perspective of legal protection and liability of the parties for adverse employee actions and liability due to potential technical mistakes. For example, it was not clear who the liable parties were if an employee were to file a discrimination claim against the center. Further, little to no personnel management training is available to supervisory personnel nor is there an operating handbook for the center.

Many of the board members felt that the center functioned as if it were a city department with Paducah finance and human resource departments providing many services as if it were a city department. In fact, employee paychecks come from the city and personnel actions such as applications, hiring and disciplinary actions all use city forms and procedures. Employee orientation is performed by the city HR department.

Several felt that the board would be better served if either the city or county managed the employees as another department and simply provided services via interlocal agreement to the other parties. The finance director brought up the annual city audit where the communications center is reported as if it were another fund of the city and impacts the city's annual financial statement. Those that commented on center staff being employees of one or the other financial partners leaned heavily towards the city being the employer and providing services through interlocal agreements to the other entities.

There seemed to be consensus that the organization was too hierarchical with too many supervisors and not enough workers. In particular, it was felt that there was not a need for both a director and an assistant director. Additionally, several board members expressed concern about staff members living out of county and/or those who had outside employment that might interfere with their primary role as center employees; particularly in the event of a disaster such as a flood or storm event.

Additionally, members felt that access to the center floor where telecommunicators were working was too free and that "drop-in" visitors should not be allowed. Fraternalization was felt to be a detractor causing telecommunicators to lose focus on first responders in the field. It was also stated, however, that scheduled visits by public safety officers and telecommunicator ride-alongs in the field were good things that provided better understanding on both sides of the radio. In any case, limiting access to the floor by non-telecommunications staff was seen as a critical issue to overall success of the organization.

Staff training was an issue identified as lacking by most board members. This ranged anywhere from technical training to personnel management. Further, there seems to be a lack of common or standardized protocols followed for various types of emergencies and from agency to agency.

Pay and benefits were compared by several board members to customer agencies and it was felt that these items were very good to even better than first responder and related agencies. This trend seems to be supported by the expenditure rate of rise discussed in a later section. That is, the largest recurring expenditure is personal services and has been rising at a very high rate.

Another area of concern to board members was the lack of sensitivity to self-criticism or constructive criticism by customer agencies. Critical review of incidents or after-action analysis is fairly common in emergency services and is used as a learning tool to improve agency performance rather than a punitive tool. However, an agency must have a culture of self-introspection which members felt was lacking in the center. There are no formal procedures in place for self-reporting of mistakes or near misses according to one member and the agency is not open to receiving constructive criticism that could contribute to improving overall effectiveness.

Most members felt that the agency lacked any strategic focus or planning and did not have any sense of capital replacement or funding to provide for it. Specifically, there seemed to be consensus that a five year master plan was definitely needed along with a funding mechanism for both annual capital replacement and a potential reserve fund for future, one-time capital expenditures. This would allow the elected bodies that provided 50% or more of the center funding to have a better sense of long-term funding needs and priorities.

### **2.1.2 Staffing**

There was a mixture of opinion on whether the center was understaffed or not with respect to telecommunicators and actual center workload. Several members felt that the “understaffing” push was directly tied to a county fire district Insurance Services Office (ISO) survey that stated that the center was understaffed for the volume of calls received. County fire representative Don Elrod provided a summary of how ISO calculated the number of needed telecommunicators for the dispatch portion of the county ISO survey. This issue is addressed further in section 2.4 of the report under center workload.

Irrespective of conclusions about telecommunicator staffing level drawn by evaluators in the ISO survey for the West McCracken CO FD, several board members felt that the center was adequately staffed for the current volume of calls and CAD events, particularly so if the operation were to be streamlined and better protocols were to be implemented. Specifically, there was some discussion about the need for use of a system such as EFD/EMD/EPD. The ambulance service has recently implemented the use of Emergency Medical Dispatch (EMD) protocols.

There was consensus among board members that consolidating with EMS dispatch would be a good idea and Almont met with Mercy Regional EMS Director James Locke to determine whether or not there was interest in pursuing this approach. Mr. Locke stated that he was definitely interested in pursuing a consolidated communications center but wanted to be ensured that EMS had a seat at the table.

Based upon the consensus of the board and Mr. Locke's positive views on the subject, a consolidated model is presented as one of the recommendations for board consideration later in the this study. Although Mercy Regional EMS is a secondary Public Safety Answering Point (PSAP) in the county, it is not an E911 center and does not receive any public funding. The Mercy Regional EMS center dispatches approximately 14,000 calls annually, of which between 7,500 and 8,000 are generated by E911 calls transferred from the Paducah-McCracken County E911 Emergency Communications Center. The E911 call volume in a majority of cases involves dispatch of fire rescue resources already being dispatched by center staff.

### **2.1.3 Governance**

Several board members felt that the current make-up of the board worked well and the board functioned as it should. However, a slight majority felt that the size of the board (11 members) made it too unwieldy to function successfully and questioned why so many appointees were on the board. It is clear that the State of Kentucky requires consolidated communications centers that access the NCIC/LINK system to have boards with a majority of law enforcement or related agencies by contract. However, many members felt this could still be accomplished with a smaller board.

The board contains one elected official representing each funding entity, a city commissioner representing the Paducah city council and a county commissioner representing the McCracken county fiscal court. These representatives pointed out the concerns for the local economy and funding of the center. Specifically, respondents felt that elected officials were not as informed about the needs of the center and what it took to properly fund the operation as they should be. Further, they were really not involved in the budget process. One very interesting point raised was that the board sometimes lost sight of the person activating the E911 system and why the various first responder agencies were present. There seemed at times to be more focus on agency needs with the ultimate customer lost in the mix of agency concerns.

### **2.1.4 Facilities/Infrastructure**

An overwhelming majority of the board felt the current building had outgrown its usefulness or was very close. Some board members felt that it at least needed some interior renovations such as new carpeting, paint, some new furniture and other like changes. However, one board member felt that anything short of a new facility was only, "...putting lipstick on a pig." Members felt that planning was needed and should consider the current building and its

component systems, depending on long-term plans to stay or leave, and developing a funding source for a new building.

Of particular concern was a lack of exterior security for staff. There was strong opinion that an exterior fenced parking lot with an electronic gate limiting access to staff only with good lighting and cameras was needed right away. Some members felt that a new building should be placed into a master plan in the 5-10 year (or earlier) time frame absent any more expansion of staff. As mentioned, board members were concerned that there was no long term capital plan or any funding source identified for such expenditures. Overall funding of the center was a theme throughout the interviews.

The CAD system was identified as in need of an upgrade to a more user friendly system and the telephone system was mentioned as needing replacement.

## **2.2 Staff Interviews**

Upon review of these summaries the issues were consolidated into four categories:

### **2.2.1 Management/Personnel issues**

The majority of the staff interviewed felt that there was a need for change at the top because of the lack of information flow and support. There were also issues about the relationship of the Director and the Communication Center staff. Also mentioned were issues involving several of the staff and their lack of teamwork or job performance.

### **2.2.2 Staffing**

Almost all interviews contained a reference to the lack of sufficient personnel in the Center which will be discussed later in the report.

### **2.2.3 Communication**

Communications staff felt that there was a lack of communication internally and externally throughout the Center. It is the perception of the staff that the Board does not understand the operation of the center or the challenges that they face on a daily basis. There appears to be a lack of communication when it comes to new policies or procedures that are discussed at the Board level with no input from staff.

### **2.2.4 Future needs**

Staff members felt that a new building with more space to include room for expansion was needed in the near future although renovation of the existing facility would suffice in the near-term. An additional and more immediate need expressed by staff is an updated CAD that is web-based and which would include additional IT support.

### 2.3 Center Workload - Overview

Figure 1 shows the trend for total incoming calls received by the center by calendar year from 2007 through 2012. Total incoming call volume is shown as red squares and actually appears to show a slight declining trend through time which appears to be driven by a significant declining trend in non-emergency calls while the volume of E911 calls actually appears to be increasing somewhat over time.

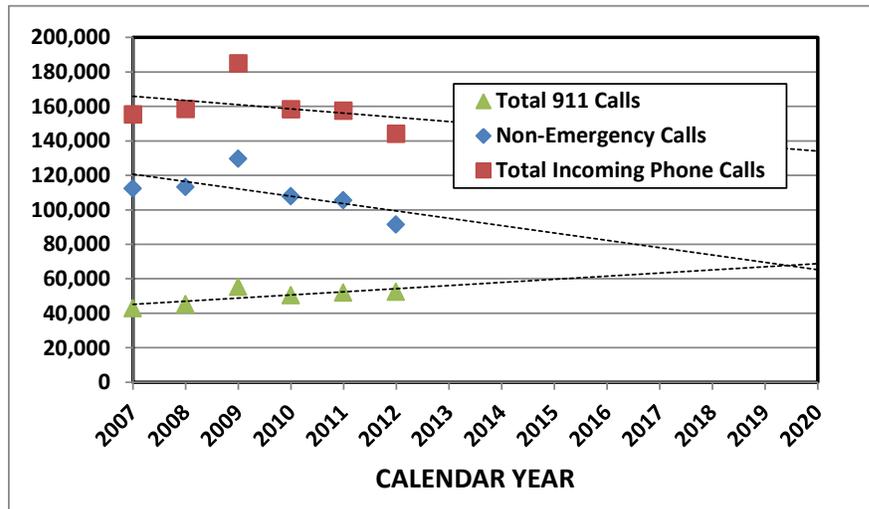


Figure 1 – Incoming telephone call volume by calendar year

Figure 2 illustrates the total volume of calls (E911 and non-emergency lines) by day of the week for the 2013 calendar year experienced by the center. Outgoing calls are also shown. A small number of inbound calls are dropped or abandoned and these are shown in red. Monday through Thursday volume is relatively static with the highest call load on Friday, dropping off on the weekend.

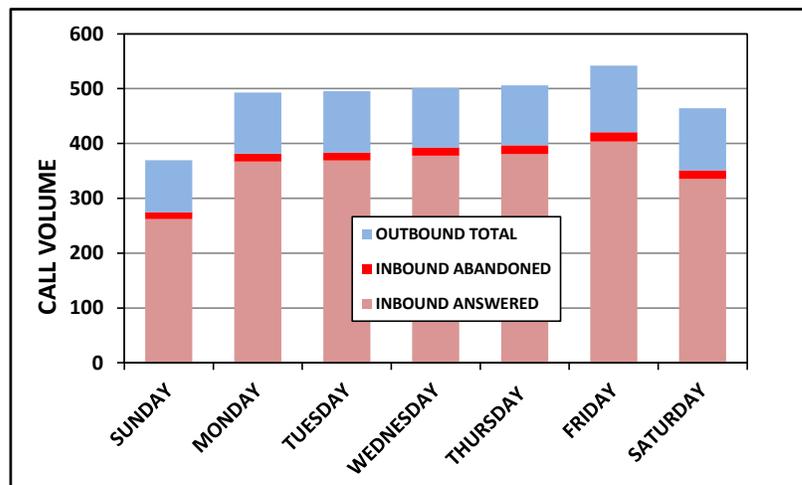


Figure 2 – Average inbound and outbound calls by day of the week

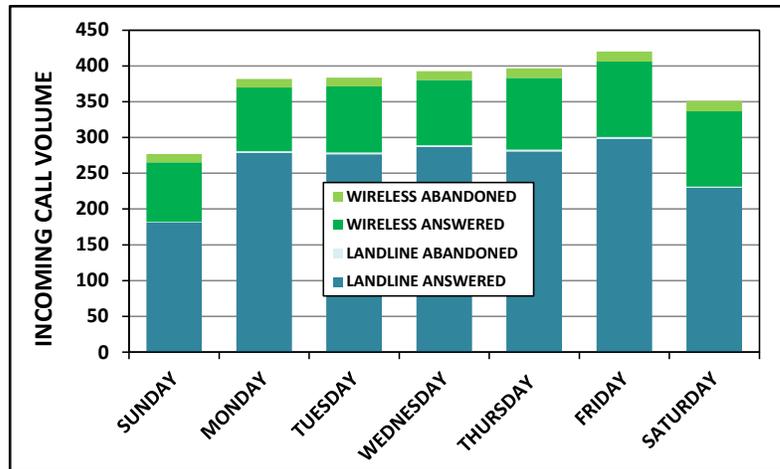


Figure 3 – Incoming wireless versus landline calls by day of the week

Figure 3 illustrates total incoming call volume only (E911 and non-emergency lines combined) but looks at landline versus wireless calls. Although there are dropped calls for both landline and wireless, the wireless volume of dropped calls is higher. The trend by day of the week is the same as the total incoming and outgoing trend since that is driven by the overall volume of incoming calls. When examining total incoming call volume for 2013, a comparison of the percentage of landline calls to cellular calls is 70.9% to 29.1%, respectively. However, when examining total E911 calls only (as seen in Figure 6 below) for calendar 2012, the ratio of landline to cellular is 20.6% to 79.4%; respectively, and this gap has continued to widen each year.

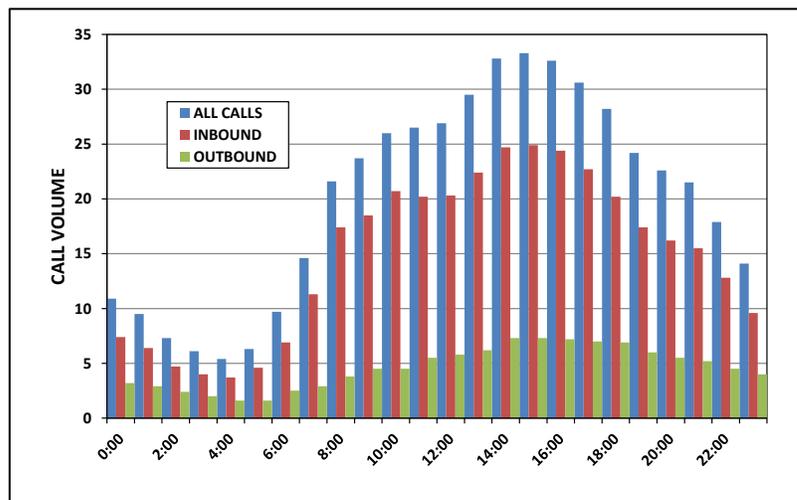


Figure 4a – volume of calls by time of day in hourly increments

Figure 4a shows the average volume of calls for calendar 2013 by time of day in hourly increments. Although the overall trend is driven by inbound call volume, the outbound volume tracks well with the incoming. Peak workload is 0800-2100 hours. It should be noted that this

trend is very similar to emergency call load or CAD events as shown in Figure 4b and supports a variable shift staffing schedule for telecommunications staff.

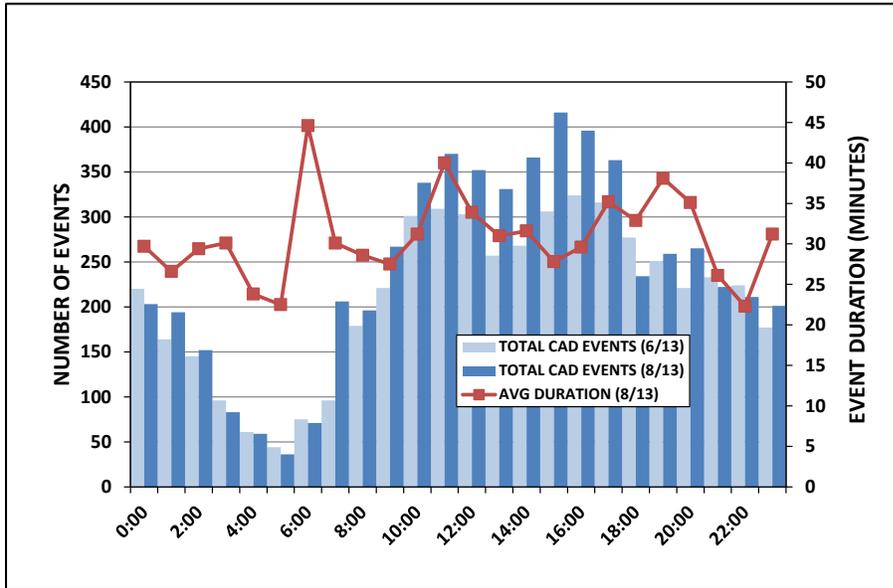


Figure 4b – CAD events June and August, 2013 with average event duration August, 2013

Figure 5 shows the total volume of incoming and outgoing E911 line calls by month for calendar 2013 with average time in minutes per call. Call volume peaks between May and August reaching a peak of nearly 4400 calls in August. The winter months reflect the slowest time of the year with a low of just under 3550 calls reached in February. Call duration ranges from a low of just under 0.9 minutes in August to a high of just over 1.0 minutes in January. It is interesting to note that the call duration seems to track somewhat the call workload by month. That is, when the call load is higher in the summer, the call duration is less. It is unclear whether or not this observation is statistically significant and/or represents a meaningful impact on workload or capacity.

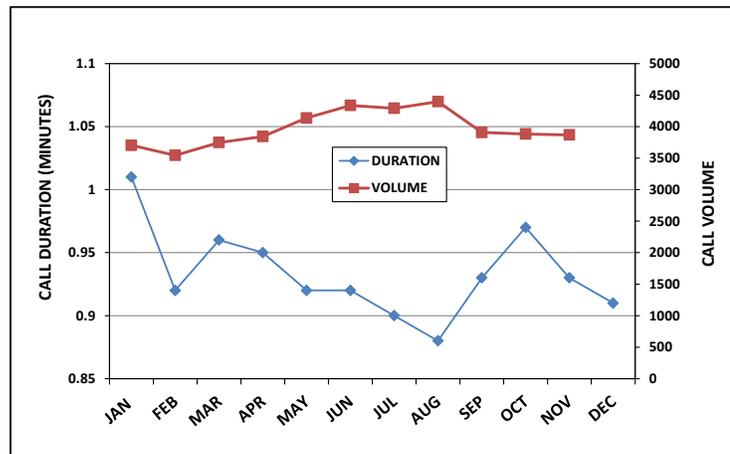


Figure 5 – Total E911 calls per month versus call duration

Figure 6 represents a common trend throughout the United States of increasing customer use of wireless versus landline technology. The increasing volume of E911 calls received by the center through time is driven by the increase in cellular calls. In fact, the rate of increase in cellular calls is greater than the increase in total E911 calls. Between 2007 and 2012, while the total number of E911 calls increased by 22.6% (42,835 to 52,524), the percentage of landline versus cellular changed from 33.7% and 66.3% (14,453/28,382) in 2007 to 20.6% and 79.4% (10,828/41,696) in 2012; respectively. Landline use for E911 calls is decreasing at a significant rate. This is particularly important to the partners from a funding perspective since the interlocal agreement anticipates increasing local landline fees to ensure that the landline and CRMS fees make up 50% or more of the annual budget. However, the partners only have the ability to raise fees on a rapidly decreasing source of E911 calls; that is wireless phones. Several board members mentioned that they are working with the local legislative delegation to increase the wireless telephone surcharge at the state level which they hope will offset landline revenue losses.

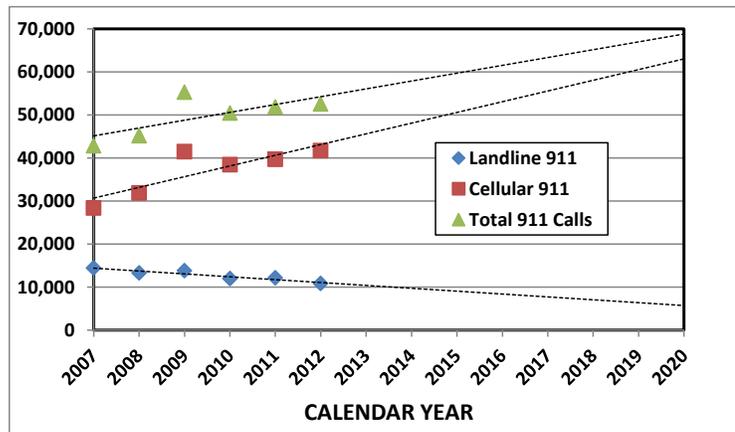


Figure 6 – Changing relationship of cellular versus landline E911 calls volume

## 2.4 Center Workload – Agency/Partner Specific Impacts

As shown in Figure 1, the overall phone call load is decreasing somewhat through time, driven by a significant annual decrease in outgoing calls. However, the volume of incoming E911 calls is steadily increasing as shown in Figure 7, which significantly impacts center workload for the telecommunicators. Figure 7 also shows the number of incidents dispatched by year broken down by those that the telecommunicators dispatch in response to an E911 call and those incidents that are “self-dispatched” by public safety or other partners in response to field procedures of each respective agency.

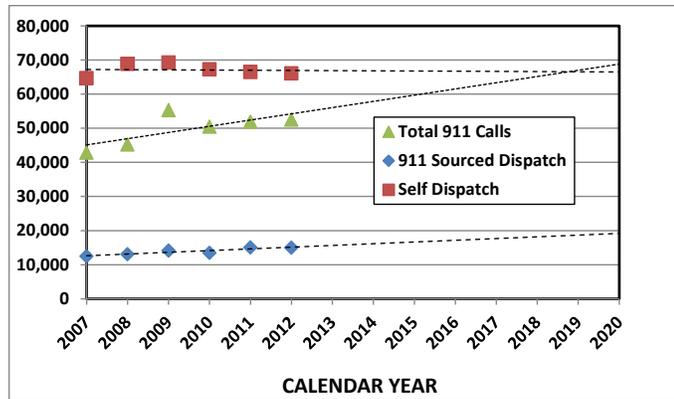


Figure 7 – Incidents dispatched versus E911 calls handled by the center by year

It is interesting to note that ISO used a matrix of alarms versus needed number of telecommunicators (Table 1) and included self-dispatches (not necessarily alarms as defined by ISO) as well as calls dispatched due to E911 calls rather than actual data from the CAD about call processing time which was another method available in the 2007 grading schedule to evaluate needed telecommunicators. Dispatch volume due to E911 calls or alarms (approximately 15,000) rather than the total of incidents (approximately 81,000) which includes self-dispatches, most of which would not be considered alarms, would suggest a lower staffing level than a minimum of six per shift suggested by the ISO survey. Also, utilizing actual call processing data as recommended by NFPA 1221 might have yielded a different result. Based upon E911 dispatches alone, minimum telecommunicator staffing according to chart #1 used by ISO in the 2007 grading schedule is 4 at all times versus the 6 actually shown in the survey.

**CALL VOLUME MATRIX TABLE #1**  
**For Public Safety Answering Points that**  
**Perform Call Taking and Dispatching**

Alarms per Year	Number of Needed Telecommunicators
Less than 731	1*
731 to 10,000	2*
10,001 to 25,000	4**
25,001 to 50,000	5**
50,001 to 100,000	6**
100,001 to 150,000	7**
150,001 to 200,000	8**
200,001 to 250,000	9**
250,001 to 300,000	10**
Over 300,000***	11**

\*Communication centers providing EMD protocols need two telecommunicators on duty at all times.

\*\*Includes a supervisor in the communications center.

\*\*\*For every 10 additional calls (alarms) that are averaged per hour (87,600 calls per year), one additional telecommunicator is required.

Table 1 – ISO grading schedule (2007) Item 422 (Credit for Operators) table showing alarms per year and needed dispatchers for centers that both perform call-taking and dispatching functions

The grading schedule adopted by ISO in the 2013 edition no longer even uses the above chart and is strictly a performance-based evaluation tool. The schedule specifically refers to emergency calls rather than total incidents and would probably not even include many of the self-dispatched incidents currently captured in center workload statistics. However, the center would be evaluated based upon staffing needed to handle all emergency calls, not just fire department emergencies. The major difference is that the schedule uses National Fire Protection Association (NFPA) standard 1221 governing emergency services communications systems. The center is evaluated based upon certain performance metrics. If those metrics are met, then the staffing is considered adequate regardless of call volume. Specifically, the standard recommends that 95% of emergency or E911 calls are answered within 15 seconds and that 99% are answered within 40 seconds. Further, the standard recommends that 90% of emergency calls are processed within 60 seconds and that 99% are processed within 90 seconds of answering the E911 call. Again, this data should be available to center staff.

The 2007 version of the ISO grading schedule gives 3% of the total PPC rating to available telecommunicators regardless of how the needed telecommunicator staffing level is arrived at; a very small portion of the overall PPC rating. Even though the new 2013 ISO grading schedule

bumps up total points available for staffing to 4% of the total rating, it is still a very small portion of the overall rating. The center received almost two thirds of the total available credit (1.74/3.00) in the West McCracken CO FD survey. Almont cautions the board against placing too much emphasis on this survey as a data point to support a need for greater staffing in the communications center. A better indicator would be the performance measures discussed previously and found in NFPA 1221. Although this data was not available to Almont for this study, it should be accessible in the CAD system.

The volume of self-dispatched calls has remained relatively stable through time but the incidents resulting from E911 calls has been increasing in relation to the increasing volume of E911 calls. This means that there is a corresponding increase in telecommunicator workload as there must be interaction via radio with those units required to respond to an E911 dispatched incident. Depending on the type of call and units needed, there may be more or less of a telecommunicator time commitment needed for any particular incident. For example, a working structure fire or hostage situation will require a dedicated telecommunicator for the duration of the incident. The more complex and lengthy the incident becomes, the greater the commitment of telecommunicator resource required.

Figure 8 shows the total number of incidents dispatched by year which has been trending around 81,000 annually, the bulk of which are self-dispatched incidents with E911 sourced incidents currently running approximately 15,000 per year. Law enforcement is the primary source of self-dispatched incidents. Figure 8 shows a slight increase with time of overall incidents dispatched which is primarily due to an annual increase in E911 sourced incidents.

The largest user of telecommunicator resources is law enforcement with a combined total number of annual incidents of approximately 72-75,000. Again, the bulk of these calls are self-dispatched. Figure 8 shows the number of incidents attributed to the Paducah police department and the McCracken County sheriff's department. The Paducah police department call volume has been increasing through time and the McCracken County sheriff call volume has been decreasing somewhat with a less well-defined trend. Due to the large percentage of the overall incident call volume attributable to law enforcement, this relationship is reflected in the overall breakdown of city versus county incidents dispatched as shown in Figure 9.

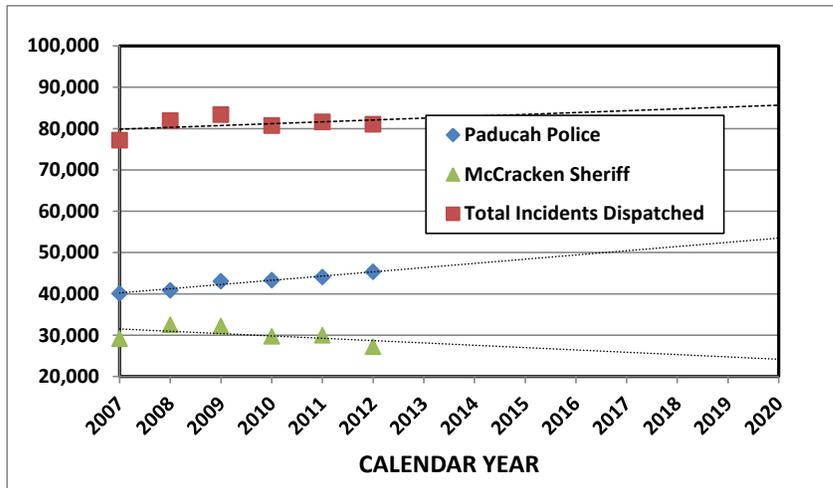


Figure 8 – Total number of incidents dispatched by year versus city/county law dispatches

Figure 9 shows the relationship of city to county incidents dispatched through time. It is apparent that the city is experiencing an increase in dispatch call volume through time which, as seen in Figure 8 is driven by an increase in incidents for the Paducah police department. Several board members asked about the impact of a traffic unit put into effect in Paducah. This may be some or all of what is causing the increase. Further, several members asked if this increase would reflect in the cost apportionment. This trend does manifest in the partner funding split as call volume between city and county is used proportionately to fund expenses of the center after deduction of any revenues received. Almont did not investigate actual telecommunicator demand due to various agency specific protocols. For example, while Paducah police department has shown an increasing trend in incident response, these calls may or may not be labor intensive for telecommunicators.

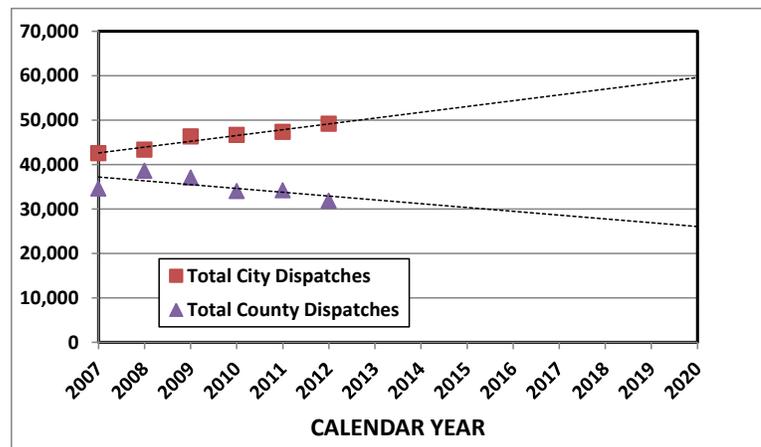


Figure 9 – Relationship of city versus county incidents dispatched through time

One issue raised by several board members was the use of the center to dispatch the county animal control function. This is not a standard practice of E911 centers and does take up some

of the resource capacity of the existing staff. Figure 10 illustrates the non-law enforcement incident dispatch workload of the center. It is interesting to note that both the Paducah fire department and McCracken fire departments have experienced a steadily increasing trend in annual dispatch volume with Paducah fire department increasing at a more rapid rate. This may well be due to an increased workload in Emergency Medical Services (EMS) or motor vehicle accident (MVA) and related calls. Many fire departments in the United States respond to medical calls as first responders in order to access, stabilize and provide initial treatment of patients. They may or may not provide ambulance service. Most of these departments are experiencing annual increases in emergency call volume and that is almost always due to increasing need for EMS and related services. This will become significant in a recommendation later in the report. The county constable/DES/EM responses have been decreasing somewhat.

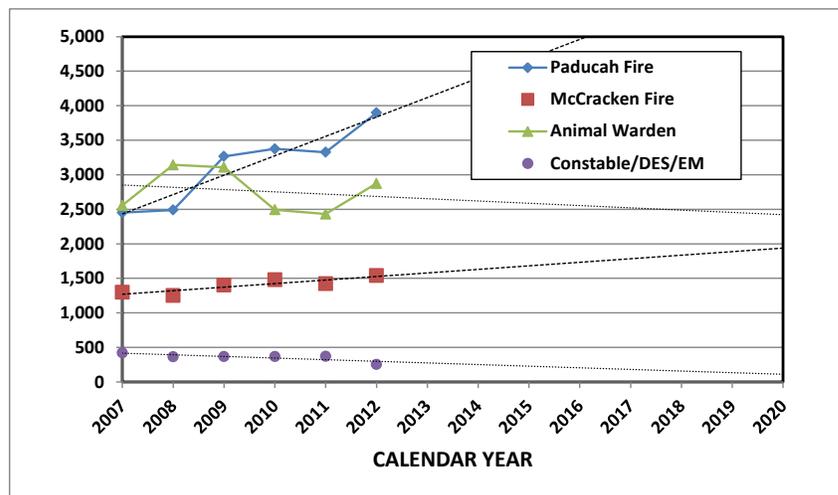


Figure 10 – Non-law enforcement incidents dispatched by year

A significant issue mentioned already is the volume of incidents dispatched on behalf of the county animal control services (Animal Warden). Figure 10 shows that this volume is greater, about double, that of county fire and not too much less than the Paducah fire department. This is a significant use of E911 center resources and is a concern to most board members. As stated, it is not common for E911 dispatch centers to provide routine dispatch services for animal control. Typically, if anything is provided, it is after hours and on weekends and only in the event of an actual emergency such as a serious dog bite where EMS and/or law enforcement may be required right away. Most animal control agencies take their own calls during normal working hours and have an on call officer to handle after hours and weekend calls.

## 2.5 Organizational Structure / Staffing

Figure 11 shows the current center organizational structure. As outlined in the interlocal agreement, the center is managed by a multi-agency advisory board specifically identified in the interlocal agreement. The center director is appointed by the board and works without a contract. The other center employees are hired by and report to the director. There is a sub-

committee of the board which is comprised of the operating agencies supported by the board (law enforcement, fire rescue, etc.).

Dispatch staff members are presently deployed on a shift schedule that is effectively comprised of 4 – 10 hour days. The staff go on and off duty at staggered times throughout the day to accommodate changing workload. Each shift is staffed with 3 personnel; a working supervisor or assistant supervisor and two telecommunicators except on Tuesdays when both the supervisor and assistant supervisor are on duty at the same time. The director and assistant director both work a normal 40 hour schedule Monday through Friday as do the administrative secretary, 911 database administrator and TAC position operator. The director position is currently vacant as is one telecommunicator position. All staff members work a total of 2080 hours per year (including vacation/holiday time off).

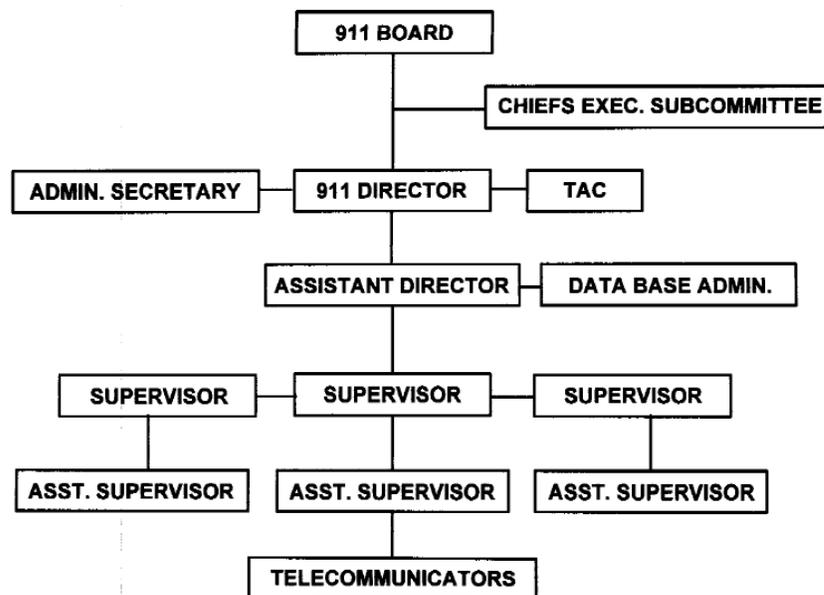


Figure 11 – Current center organizational structure

In summary, there are currently five positions within the table of organization, including the director and assistant director positions, working an 8am-5pm Monday-Friday schedule. There are three supervisor and four assistant supervisor positions, which function more as lead telecommunicators, and ten telecommunicators, all of whom work 4-10 hour staggered shifts. Many board members felt that the organization was too top heavy, both at the director/assistant director level and at the shift supervisory level given the size and scope of the organization. There are currently 22 full-time equivalent (FTE) positions budgeted in FY 2014 in the center.

Figure 12 illustrates (based upon best data available) the center telecommunicator staffing level by time of day versus CAD events for June and August of 2013. For the period 2100-0800 hours

(a 12-hour interval), there are 3 telecommunicators on duty including a supervisor or assistant supervisor. This increases to 4, and as many as 7, telecommunicators from the hours of 0900-2000.

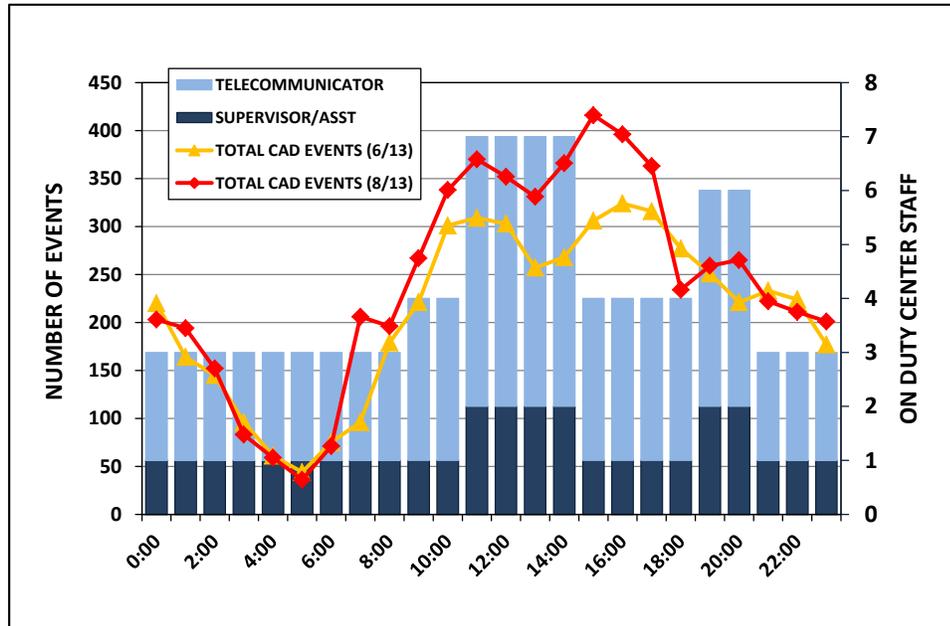


Figure 12 – Center telecommunicator staff and June/August CAD events by hour of the day

All incoming calls are answered by whichever telecommunicator is available at the time the call comes in and in the order that the call is received. If a call comes in for a medical emergency, the responding telecommunicator will gather the appropriate information and then transfer the call to the secondary PSAP, Mercy Ambulance, via a one-button transfer. The telecommunicator will stay on the line to determine whether or not additional resources such as fire rescue are required to respond to the call.

## 2.6 Budget/Finance Trends – Revenue

Figure 13 shows total revenue by year received by the board that is used to offset annual center expenditures. Sections 65.7629 and 65.7635 of the Kentucky revised statutes provide for a charge on all commercial mobile radio service (CMRS) devices and the disbursement of a portion of those charges through the Kentucky CMRS board to board-certified PSAPs. The Paducah-McCracken center is certified to receive those funds which are disbursed according to KRS 65.7631. The current monthly charge per wireless line is \$0.523 (effective July 1, 2006) and can only be changed by act of the General Assembly. Several board members discussed recent efforts of local elected officials and staff to work with their legislative delegation to increase the rate in an effort to generate more revenue from this source; particularly since the increasing volume of E911 calls is being driven primarily by increases in cellular calls while landline E911 calls have been decreasing at a corresponding rate.

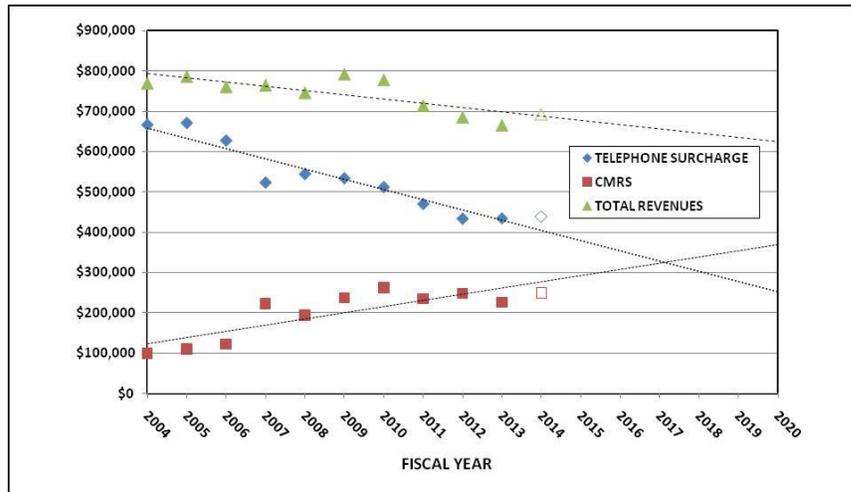


Figure 13 – Total revenue and telephone surcharge versus CMRS revenue by year

Although CMRS revenue has been increasing, it has not kept pace with the revenue loss from locally adopted landline charges, which has led to a decreasing trend in overall revenue from both sources. Section 11 of the interlocal cooperation agreement between Paducah and McCracken County for operation of the joint city/county 911 Emergency Communication Service provides for an assessment of \$1.50 per month per line on all phone lines in McCracken County as allowed by KRS 65.760. This section states further that, “The amount of surcharge shall be reviewed by the City and County at the end of each fiscal year...” and, if “...the total revenues realized from all surcharges paid to the 911 Service Fund and the service charges collected and actually distributed to 911 by the Commercial Mobile Radio Service Board (“CMRS”) are less than 50% of the approved budget for the next fiscal year, both the City and County shall,...equally increase their respective surcharges to such extent that the projected total revenues of the surcharges for the next fiscal year shall be 50% or more of the approved budget for such fiscal year.”

Figure 14 shows total surcharge and CMRS revenues versus total and 50% level of the center expenditure budget by year. It should be noted that by FY 2011 the revenues were exceeded by the 50% expenditure level and the gap has been widening each year since then. Although the surcharge on landlines is the only part of the revenue stream that can be changed at the local level and barring any other dedicated funding sources, this increase is required by the interlocal and such action would help offset the continued gap between revenue and expenditures. While this is true, it is also important to note that increases in landline charges may result in a lesser rate of revenue increase over time since E911 calls attributed to landlines have been falling at a high rate which may reflect changes in landline versus mobile phone ownership; a trend likely to continue. It may be more beneficial to work with the General Assembly to expeditiously increase the CMRS charges and funding stream to offset these losses as this trend is certainly seen statewide. Further, the financial partners may want to pursue other funding sources that

may be available to them to help offset increasing costs as well as more aggressive cost containment measures.

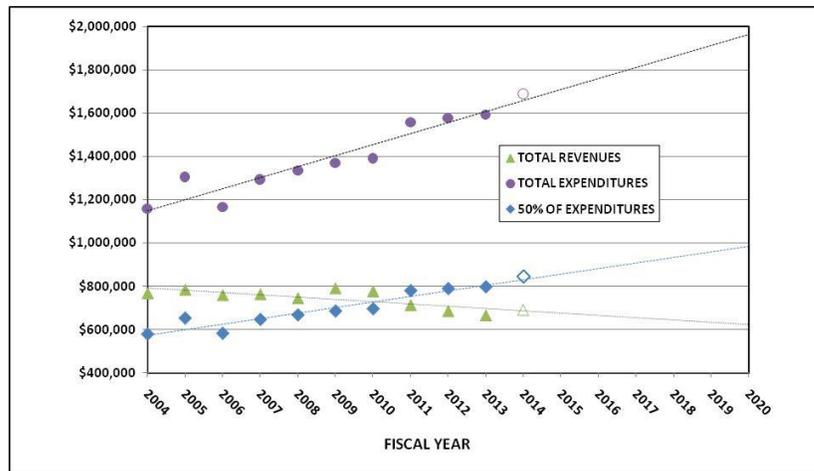


Figure 14 – Total revenues versus total and 50% of center expenditures by year

Figure 15 illustrates the relationship between annually increasing center expenditures versus the contribution of the two financial partners in the interlocal agreement. Due to the rate at which center expenditures are increasing and revenue is decreasing, both partner contributions have been increasing annually albeit at a lesser rate for the county which reflects changing relationships in annual call volume as questioned by several board members. Barring any change, an increasing subsidy will be required.

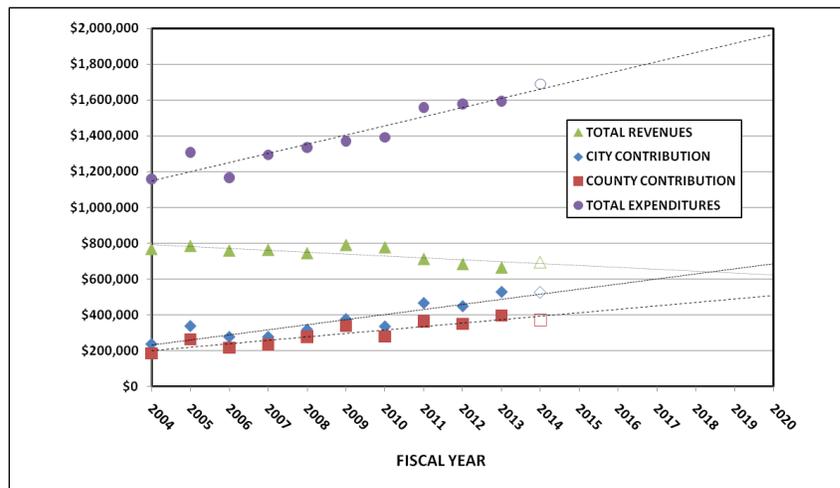


Figure 15 – Center expenditures versus revenues and partner contributions by year

One option that is explored later as part of this study (Staffing Model Two) needs further discussion by the board. That is the potential to consolidate the Mercy EMS Ambulance Service dispatch function within the Paducah-McCracken County E911 Emergency Communications

Center operation. This would benefit both parties in that additional resources could be added, as has been proposed by board members, but at a reduced cost with the financial commitment from Mercy. This would provide dispatch services at a lesser cost than currently experienced on their own, benefiting all participating agencies.

## **2.7 Budget/Finance Trends – Expenditures**

Table 2 shows the detailed expenditure budget as audited for fiscal years 2009-2013 and the adopted for FY 2014 by expenditure category. The interlocal agreement provides for the funding of an annual reserve not to exceed 12% of the prior fiscal year budget. This reserve and any unexpended budget funding are used as cash forward for the subsequent fiscal year. While this reserve is carried forward each year, it is not allocated as a reserve for future capital expenditures that may be needed and outlined in a master spending plan (five year capital improvement plan for example). An additional reserve for capital expenditures would need to be established for this purpose and is recommended by Almont for consideration by the board.

It is apparent that there has been no capital replacement since 2009 and the board will need to develop a capital spending plan as it moves forward; specifically this should be done as part of a five year master planning process. Several large items have been identified that will need to be purchased over the next 5-10 years as will be discussed later. It should be noted that there is no debt service currently and the board might consider financing major projects as it develops a long-term capital plan. Several board members discussed the need to build or purchase/renovate a larger building within the next 5-10 years as the current facility is near capacity and in need of renovation. Further, board member interviews conducted by Almont and staff member interviews conducted by board chairman Kyle suggested that some renovation of the existing building should be pursued in the short-term even if a new building is contemplated within 5-10 years.

	2009	2010	2011	2012	2013	2014
<b>PERSONAL SERVICES</b>	<b>\$1,131,644</b>	<b>\$1,119,509</b>	<b>\$1,293,569</b>	<b>\$1,275,677</b>	<b>\$1,302,261</b>	<b>\$1,382,720</b>
FT-Regular	\$711,786	\$702,004	\$811,062	\$803,800	\$809,822	\$873,255
PT-Regular	\$10,028	\$14,796	\$0	\$0	\$0	\$0
Longevity	\$8,086	\$8,131	\$9,303	\$10,339	\$11,038	\$12,025
FT-Overtime	\$74,432	\$52,823	\$53,488	\$41,182	\$58,505	\$50,000
FICA	\$46,563	\$44,589	\$50,337	\$48,890	\$50,265	\$57,990
Medicare	\$10,890	\$10,428	\$11,772	\$11,455	\$11,756	\$13,565
CERS (Non-hazardous)	\$108,360	\$124,000	\$150,370	\$162,392	\$171,793	\$176,675
Workers Compensation	\$2,335	\$1,435	\$1,155	\$1,164	\$1,015	\$1,030
Unemployment	\$229	\$669	\$5,286	\$2,439	\$246	\$1,350
Life Insurance	\$2,381	\$2,445	\$3,245	\$3,946	\$2,905	\$3,270
Cafeteria/Flex plan	\$147,504	\$148,814	\$186,561	\$183,934	\$178,438	\$185,180
Clothing Allowance	\$9,050	\$9,075	\$10,132	\$5,494	\$5,758	\$6,700
Gym Reimbursement	\$0	\$300	\$858	\$642	\$720	\$1,680
<b>OPERATING EXPENSES</b>	<b>\$239,284</b>	<b>\$272,461</b>	<b>\$264,979</b>	<b>\$302,046</b>	<b>\$291,431</b>	<b>\$305,880</b>
<b>CONTRACTUAL SERVICES</b>	<b>\$95,217</b>	<b>\$100,649</b>	<b>\$99,049</b>	<b>\$111,276</b>	<b>\$128,846</b>	<b>\$129,645</b>
Audit	\$500	\$1,200	\$1,200	\$1,200	\$1,200	\$1,400
Insurance-Liability	\$16,378	\$17,503	\$18,228	\$21,035	\$21,460	\$24,680
Insurance-Property Damage	\$4,132	\$4,382	\$3,946	\$3,823	\$4,111	\$4,735
Computer Software	\$27,625	\$31,142	\$30,692	\$30,692	\$31,351	\$32,165
Communication Equipment	\$22,784	\$21,783	\$22,530	\$32,630	\$31,727	\$38,620
Other Equipment	\$1,364	\$2,730	\$1,061	\$152	\$3,161	\$3,115
Legal Services	\$1,344	\$625	\$0	\$0	\$2,021	\$2,000
Other Services	\$21,090	\$21,284	\$21,392	\$21,744	\$33,815	\$22,930
<b>COMMODITIES</b>	<b>\$144,067</b>	<b>\$171,812</b>	<b>\$165,930</b>	<b>\$190,770</b>	<b>\$162,585</b>	<b>\$176,235</b>
Fuel	\$366	\$453	\$0	\$0	\$754	\$2,000
Equipment (R&M)	\$5,901	\$16,265	\$9,811	\$31,077	\$10,277	\$5,700
Property/Plant (R&M)	\$286	\$2,125	\$200	\$3,862	\$0	\$3,000
Office	\$8,119	\$9,853	\$9,493	\$6,230	\$4,726	\$7,500
Electric	\$22,672	\$25,671	\$26,460	\$25,644	\$26,521	\$28,450
Natural Gas	\$1,167	\$536	\$736	\$676	\$834	\$1,300
Telephone	\$68,994	\$73,830	\$78,766	\$85,922	\$80,926	\$89,065
Water	\$433	\$615	\$716	\$769	\$489	\$600
Refuse	\$1,200	\$1,500	\$1,500	\$1,500	\$1,500	\$1,500
Training/Travel	\$3,538	\$8,035	\$4,527	\$1,947	\$4,231	\$3,220
Dues, Memberships, Books/St	\$1,290	\$985	\$1,314	\$1,125	\$0	\$0
Advertisement	\$107	\$766	\$210	\$0	\$0	\$0
Postage	\$804	\$893	\$723	\$274	\$227	\$600
Cellular Phase II	\$29,190	\$30,285	\$31,474	\$31,744	\$32,100	\$33,300
<b>CAPITAL EXPENSES</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
<b>DEBT SERVICE</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
<b>RESERVE<sup>(2)</sup></b>	<b>\$164,511</b>	<b>\$167,036</b>	<b>\$187,026</b>	<b>\$189,327</b>	<b>\$191,243</b>	<b>\$202,632</b>
<b>TOTAL BUDGET</b>	<b>\$1,370,928</b>	<b>\$1,391,970</b>	<b>\$1,558,548</b>	<b>\$1,577,723</b>	<b>\$1,593,692</b>	<b>\$1,688,600</b>
<sup>(1)</sup> Audited fiscal year budgets (July 1-June 30) through FY 2013, adopted FY 2014 budget						
<sup>(2)</sup> Reserve maintained by interlocal agreement at 12% each year; unexpended reserve carried forward as cash each year						

Table 2 – E911 Center expenditure budget by fiscal year showing detail

Figure 16 shows audited (2009-2013) and adopted (2014) center budgets by fiscal year along with major categories of personal services and operating expenses. No capital purchases were made during this time frame. The bulk of the expenditure budget is comprised of personal services costs which are the major driver for increasing center costs each year, although operating expenses are also increasing but at a lesser rate. The increase in personal services costs is significant in light of pressure to increase staffing levels as mentioned by a majority of

board members. Several board members felt that the salary/benefit structure of the center was rich relative to other city/county organizations. A primary focus of this study is analysis of the need for additional staffing and two different models are proposed to accomplish and fund this.

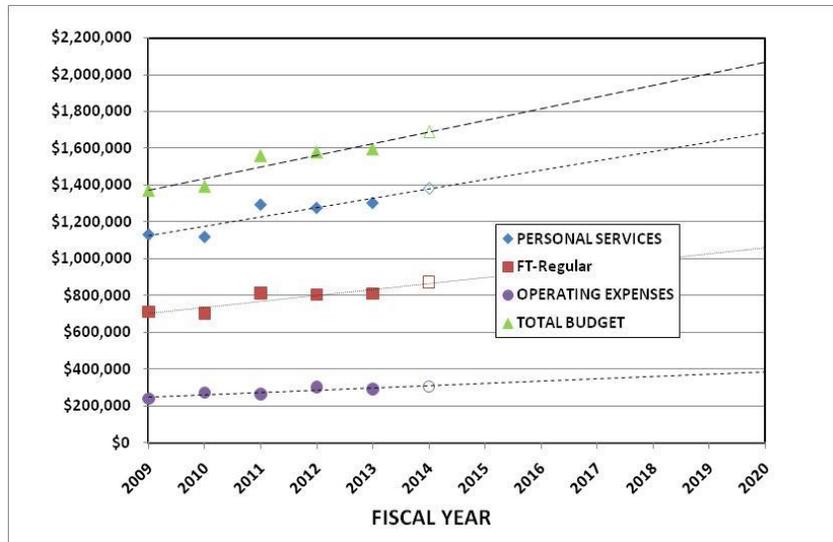


Figure 16 – Total center expenses and major categories by year

For reference, Table 3 is provided which shows current center staffing by position. The salary information shown was provided by the city finance department and comes from a payroll projection dated April, 2013. The salaries are slightly higher than adopted as the projection at the time anticipated a 2.5% COLA which is higher than actual. This also reflects in slightly higher benefit rates. The salaries below are used to project costs for various alternative staffing models shown later. Benefit rates are approximately 45% for office staff and 49% for telecommunications staff (including supervisors). Benefits are similar to those provided for city employees and center staff members are enrolled in the Kentucky retirement system as non-high risk employees.

The board had anticipated adding three full FTEs in FY 2014 but held off pending the outcome of this study and the staffing level was maintained at FY 2013 levels; that is, 5 office staff working a normal 5-day workweek and 17 telecommunications staff working 4-10 hour staggered shifts and an annual schedule of 2080 hours for both groups.

STAFFING BY POSITION	ANNUAL		
	SALARY <sup>1</sup>	BENEFITS	TOTAL
Director (open)	\$67,100.02	\$26,764.46	\$93,864.48
Assistant Director (filled)	\$56,162.86	\$23,167.62	\$79,330.48
Administrative Secretary (filled)	\$32,223.88	\$17,419.02	\$49,642.90
Data Entry Clerk (filled)	\$33,670.26	\$17,896.38	\$51,566.64
Terminal Agency Coordinator (filled)	\$40,987.70	\$19,373.18	\$60,360.88
Shift Supervisor 1 (filled)	\$42,826.42	\$20,348.18	\$63,174.60
Shift Supervisor 2 (filled)	\$42,626.48	\$20,295.40	\$62,921.88
Shift Supervisor 3 (filled)	\$43,136.34	\$20,430.08	\$63,566.42
Assistant Shift Supervisor 1 (filled)	\$40,681.94	\$19,781.12	\$60,463.06
Assistant Shift Supervisor 2 (filled)	\$40,509.04	\$19,489.92	\$59,998.96
Assistant Shift Supervisor 3 (filled)	\$41,171.78	\$19,850.54	\$61,022.32
Assistant Shift Supervisor 4 (filled)	\$41,316.86	\$19,949.34	\$61,266.20
Telecommunicator 1 (filled)	\$32,137.82	\$17,478.56	\$49,616.38
Telecommunicator 2 (filled)	\$40,669.46	\$19,376.56	\$60,046.02
Telecommunicator 3 (filled)	\$40,407.12	\$19,708.84	\$60,115.96
Telecommunicator 4 (filled)	\$40,382.16	\$19,674.26	\$60,056.42
Telecommunicator 5 (filled)	\$29,366.22	\$16,903.18	\$46,269.40
Telecommunicator 6 (filled)	\$40,147.12	\$19,616.54	\$59,763.66
Telecommunicator 7 (filled)	\$39,325.78	\$19,387.74	\$58,713.52
Telecommunicator 8 (filled)	\$41,446.86	\$19,950.64	\$61,397.50
Telecommunicator 9 (filled)	\$31,438.16	\$17,313.98	\$48,752.14
Telecommunicator 10 (unfilled)	\$28,824.64	\$16,774.74	\$45,599.38
Overtime	\$50,016.72	\$13,411.32	\$63,428.04
OFFICE STAFF SUBTOTAL	\$230,144.72	\$104,620.66	\$334,765.38
SHIFT STAFF SUBTOTAL	\$627,589.56	\$309,554.88	\$937,144.44
TOTALS	\$936,575.64	\$444,361.60	\$1,380,937.24

<sup>1</sup>From city payroll projection April, 2013 (includes 2.5% COLA)

Table 3 – Current staffing by title and annualized pay rates (April, 2013 payroll projection)

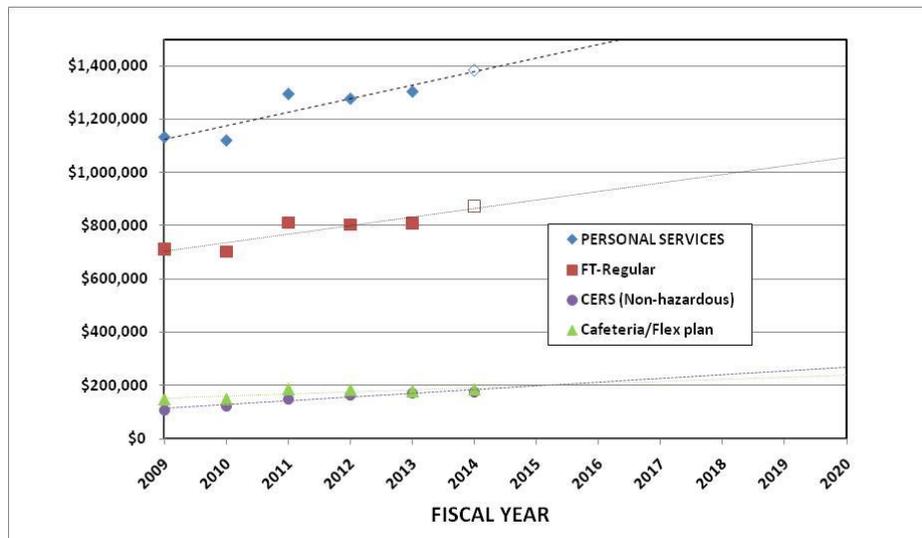


Figure 17 – Personal services budget and components by fiscal year

Figure 17 shows total personal services expenditures by fiscal year as solid symbols for audited and open symbols for adopted budgets. Various components of the total personal services category are shown for comparison including full-time regular salaries and the retirement (CERS)

and cafeteria/flex plan (remaining benefits) elements. As previously mentioned, benefits are nearly 50% of salary expenditures for office and shift staff. Average annual salary of shift personnel, including supervisors and telecommunicators, is \$36,917.03 while average benefits run \$18,209.11 for a total average annual compensation package of \$55,126.14 per shift FTE.

## 2.8 Economic Model

Plan Year	Base Year	Year 1	Year 2	Year 3	Year 4	Year 5
Fiscal Year	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19
<b>ECONOMIC VARIABLES</b>						
Total Calls Dispatched	85,913	86,986	88,112	89,291	90,526	91,817
County Calls Dispatched	33,763	33,287	32,818	32,355	31,899	31,449
City Calls Dispatched	52,150	53,699	55,294	56,936	58,627	60,368
911 Calls Dispatched	15,856	16,466	17,100	17,758	18,442	19,152
Price Level Adjustment		4.0%	4.0%	4.0%	4.0%	4.0%
<b>REVENUES</b>						
County Contribution	384,026	451,899	478,483	504,134	530,174	556,639
City Contribution	512,075	618,671	672,187	726,349	782,976	842,149
Total Partner Contribution	996,100	1,070,569	1,155,776	1,235,943	1,318,978	1,404,996
Telephone Surcharge, CMRS Fees, Other	692,500	685,575	678,719	671,932	665,213	658,561
Loan/Lease Purchase Proceeds	-	-	-	-	-	-
Other Revenue Sources	-	-	-	-	-	-
Total Other Revenue Sources	692,500	685,575	678,719	671,932	665,213	658,561
<b>Total Revenues</b>	<b>1,688,600</b>	<b>1,756,144</b>	<b>1,834,495</b>	<b>1,907,875</b>	<b>1,984,191</b>	<b>2,063,557</b>
<b>EXPENDITURES</b>						
Current Personnel	1,382,720	1,438,029	1,495,550	1,555,372	1,617,587	1,682,290
Current Operating	305,880	318,115	330,840	344,074	357,837	372,150
Current Capital Replacement	-	-	-	-	-	-
New Capital Projects	-	-	-	-	-	-
Debt Service/Lease Purchase Payments	-	-	-	-	-	-
Current Reserve	202,632	202,632	210,737	219,166	227,933	237,050
Telecommunicator Position (Equipped)	-	-	-	-	-	-
Cumulative FTE	-	-	-	-	-	-
Cumulative New Telecommunicator Position Operating	-	-	-	-	-	-
Other Expenditures or Adjustments	-	-	-	-	-	-
<b>Total Expenditures</b>	<b>1,688,600</b>	<b>1,756,144</b>	<b>1,834,495</b>	<b>1,907,875</b>	<b>1,984,191</b>	<b>2,063,557</b>
<b>DECISION UNITS AND UNIT COSTS</b>						
Telecommunicator Position (Equipped)						
FTE (Telecommunicator)						
New Telecommunicator Position Operating						
Cumulative New FTE (Telecommunicator)	-	-	-	-	-	-
Cumulative New Telecommunicator Position Operating	-	-	-	-	-	-
Cumulative Total FTE (Shift positions)	17.0	17.0	17.0	17.0	17.0	17.0
Cumulative Peak Telecommunicator Positions	5	5	5	5	5	5
Telecommunicator Position (Equipped)	50,000	52,000	54,080	56,243	58,493	60,833
FTE (Operating)	56,000	58,240	60,570	62,993	65,513	68,134
Per Position (Operating)	5,000	5,200	5,408	5,624	5,849	6,083
<b>SERVICE LEVEL STATISTICS</b>						
Total Dispatches/Telecommunicator	5054	5117	5183	5252	5325	5401
911 Dispatches/Telecommunicator	933	969	1006	1045	1085	1127

Table 4 – Five year economic model projecting current conditions

Absent any change in revenue collection (such as added CMRS revenue if legislative changes are made) or addition of alternative recurring revenue sources and assuming the current linear relationship of dispatch call volume to partner funding and increases in expenditures, the economic model in Table 4 above shows how the total expenditure budget will rise from approximately \$1.69 million as adopted in FY 2014 to approximately \$2.06 million in FY 2019 (an increase of 21.9%) while revenue will decrease from an estimated \$692,500 to \$658,561 (a 5.2%

decrease). Similarly, estimated city and county contributions will increase from \$512,075 (after reduction of \$57,150 from cash carried forward from FY 13 in excess of 12% reserve) to \$842,149 (a 64.5% increase) and \$384,026 (after reduction of \$42,850 from excess cash forward) to \$556,639 (a 44.9% increase). Figure 18 graphically illustrates this increase in partner contribution.

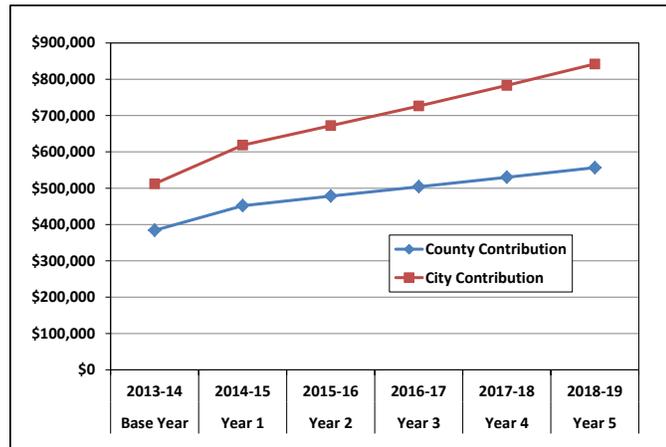


Figure 18 – Base case showing partner contributions given no change in current conditions

The economic model in Table 4 was developed using the best available data from the communications center about dispatch call volume over time (collected by calendar year) and budgetary data from the Paducah finance department for fiscal years 2004 through 2014. Detailed expenditure budgets were available from 2009 through 2013 (audited) and adopted for 2014. The 4% price level adjustment is based upon actual budgetary growth through time and can be adjusted in the model. The “economic variables” are factors currently used pursuant to the interlocal agreement to determine the financial partner split of various operating costs after subtraction of any revenues received and are projections based upon communications center data for past years which show a fairly linear relationship over time.

The major revenue sources are local telephone fees and CMRS mobile fees distributed by the state. The model contains a line for other potential revenue sources that may become available but none are shown for the base case. Revenue has been steadily decreasing approximately 1% annually, a trend built into the model. If efforts are successful to increase the CMRS revenue, then the model would need to be changed to reflect the additional anticipated revenue. The partner contributions are based upon the formula set forth in the interlocal agreement. That is, the personal services and operating expenses are proportionately reduced by any revenue first. Then, the remaining personal services costs attributed to 911 dispatch call load are split 50/50 between the city and county. Remaining personal services costs are then further split proportionately between the city and county based upon respective dispatch volume. All other operating and capital costs are split equally.

The model also shows the 12% reserve allowed under the interlocal agreement. It should be noted that this reserve is carried forward each year and increased to the extent necessary to meet the reserve level. This amount is not shown as an annual expenditure in the model with the exception that the incremental amount needed to increase it each year to the 12% level is added to the overall expenditures. Although there are currently no capital expenditures budgeted (either major projects or annual capital equipment replacement) and no debt service, the model provides for funding capital projects either through various borrowing mechanisms or outright purchase. This will become important in optional models shown in a later section for board consideration. There is a line titled "other expenditures or adjustments" that allows various recurring or one-time expenditures not otherwise identified to be considered in the model.

The section of the model called "decision units" is where the user can add additional FTEs with a fully loaded cost that escalates through time (using the inflation factor from above) and/or dispatch workstations with associated annual operating costs. This will also be used later when we consider enhanced service levels. The costs for FTEs are based upon an average of current communications center staff costs (fully loaded) for shift personnel. Work station costs (one time and annual operating) are estimates only to include hardware, software and associated licenses and furniture. For comparative purposes, 911 dispatch and total dispatch call loads per shift FTE are shown as a rough guide to workload through time in each case examined. Data on actual call dispatch workload by hour of the day by month (except for June and August of 2013) or full year was not available but this approach can be used to compare various models.

## **2.9 Technology / Infrastructure**

### **2.9.1 Computer Aided Dispatch (CAD):**

The Communications Center currently operates on an HTE 400 Computer-Aided Dispatch (CAD) system. The operating system is several versions behind the most current, MS Windows-based version. The system appears to be working satisfactorily for the Center at this time but has limitations that increase the time it takes for telecommunicators to enter and extract data. The City and County user departments (City Police, City Fire, County Sheriff, County Fire and EM) and Volunteer Fire Departments are dispatched from the Communications Center. City Police, Fire, and Sheriff all have Mobile Data Computers connected to the CAD. E911 calls requiring ambulance response are transferred to Mercy Regional Ambulance dispatch via a one-button transfer.

### **2.9.2 Radio Systems:**

The City and the County public safety agencies utilize separate Motorola 800 MHz MTC3600 Smart Net radio systems. Both systems run independently of each other except for two talkgroups which are tied together in the back room. The two common talkgroups are 1 EM talkgroup and 1 SO talkgroup. Both systems are on equipment that is at or very near the end of

its useful life and will need upgrading in the near future. The volunteer fire departments use VHF radio systems.

**2.9.3 Station/Unit alerting:**

Alerting is accomplished using two Zetron 6/26 alerting panels located on the dispatch floor. These panels are located between dispatch positions and require the dispatchers to get up from their seats to activate; an inherent inefficiency in the notification process.

**2.9.4 911 Phone Systems:**

The center is on a Vesta Pallas system manufactured by Plant.

## 3.0 Recommendations

### 3.1 Governance/Management

#### 3.1.1 Governance

The current interlocal cooperation agreement between the City of Paducah and McCracken County, last modified in 2009, establishes a joint board with a very broad charge to, "...administer all aspects of the 911 Service...". Based upon input from a majority of the board members, it appears that while the board generally works well together, there is a general sense that it is too large to be effective given all of its charges.

We recommend that the board be comprised of no more than seven members rather than the current eleven, and that four of the seven members be law enforcement entities. This would still meet the state's contractual requirement of a board majority being law enforcement thus enabling access to the NCIC/LINK system. Recommended members would be: the county sheriff or designee, a representative from the county volunteer fire departments appointed by the fiscal court, the city fire chief or designee, the city police chief or designee, the Kentucky State Police post commander, the Commonwealth Attorney and the director of Mercy Regional Ambulance Service.

There are 10 functions for which the board is responsible under the current interlocal agreement. Each of these functions is addressed with recommendations as follows:

- (a) "The board shall be responsible for overall planning of 911 service..."; this function should continue and the board should be responsible for preparing a five year master plan with funding needs for presentation to funding partners (two or three partners depending on whether or not the board pursues consolidation with EMS dispatch) as well as annual budgets;
- (b) "The board shall administer all aspects of the 911 service..."; it is recommended that the board not be responsible for day-to-day operations, including personnel administration, which should be the responsibility of the department head pursuant to city policy (recommend center become a city department), but rather the board should be responsible for ensuring that the center supports all of its customers according to agreed upon protocols of the public safety entities receiving such dispatch services and the board should develop and adopt center operating policies and procedures which can be periodically updated;
- (c) "The board shall provide for coordination and support of the Kentucky Chapter of the National Emergency Number Association (NENA)."; no change recommended;
- (d) "The board shall promote the use of the 911 services..."; no change recommended;
- (e) "The board shall prepare and submit an annual report to the city and county..."; no change recommended;

- (f) “The board shall prepare and submit to the city and county the recommended budget for the 911 service...”; it is recommended that the director and a finance committee appointed by the board prepare the annual budget, such committee to be comprised of finance/budget staff from the city and county as well as the center director and board chair;
- (g) “The board or its designated committee shall approve monies that are to be expended...”; it is recommended that the board only be required to approve major capital projects as identified in the five year master plan and accompanying capital improvement plan (CIP) and that day-to-day operational expenses whether for personal services or operating costs be managed by the director following accepted city procurement and accounting practices;
- (h) “The board shall file or cause to be filed quarterly financial statements...”; it is recommended that the director and finance committee review and provide such quarterly statements to the board and the funding partners;
- (i) “The board shall cause to be kept adequate records of 911 service...”; it is recommended that the board identify by policy/procedure such records as are desired to be kept by the director;
- (j) “The board shall have exclusive management control of all communication terminals which access LINK/NCIC/NLETS files...”; no change recommended.

Most members seemed supportive of either the city or county actually managing the employees as a department of either entity. The city already effectively manages the finances and payroll functions of the center. Employee actions from hiring and orientation through pay and benefits services are provided by the HR and Finance departments. The center is now treated as a fund of the city and is considered as such in the city’s annual financial audit. All purchases are handled through the city Finance department as well as all other normal governmental accounting functions. It is unclear from a liability perspective who is responsible for adverse employee actions and dispatch errors. Almont recommends that the board consider requesting that the E911 center become a full city department which most members feel is practically the case now. While it is recommended that the center become a city department with all staff reporting to a director who reports to the city manager, the city manager should utilize the board in an executive search and hiring recommendation for the director and should strongly consider any recommendation to terminate the director for cause by majority vote of the board.

While somewhat cumbersome, the current formula for cost distribution based upon CAD events appears to be functioning effectively, although the actual practice of calculating costs and paying on a quarterly basis should be reflected in the interlocal agreement. Additionally, should the ambulance dispatch service be consolidated within the center operation, provision needs to be made for a third funding partner. At least initially, the ambulance service could simply be charged a fixed amount based upon the cost of integrating staffing to support their inclusion which could be escalated by an inflation factor each year. This would be easier than trying to

integrate a third partner into the CAD event calculation, particularly when many of the CAD events are common to those already responded to by fire rescue partners. Should the board consider an alternative funding source as discussed below, it may want to use such a countywide source to fund 100% of center operations which would make the current cumbersome allocation scheme obsolete and would help allay partner concerns about equity of funding.

### **3.1.2 Management/Personnel issues**

Section 9 of the interlocal agreement addresses budget and funding, and permits a fund reserve of no more than 12% of the prior year operating budget. It may be advisable to retain a fund-specific reserve for emergency purposes; however, there is a greater and additional need for a capital replacement fund that may be in excess of a 12% reserve already identified. Perhaps the requirement for a 12% reserve could be reduced and a capital reserve could be added in the interlocal agreement to accommodate this need.

The issue of fees should also be addressed in the interlocal agreement. As discussed, the telephone service fee authorized by KRS 65.760 of \$1.50 per month per land-line is probably not a viable long-term funding solution. The agreement further states that the surcharge shall be increased if the telephone fees plus the CRMS fees are less than 50% of the operating budget in any given year. These fees were less than 50% of the operating budget by FY 2011 (Figure 14) and have not been increased since then.

It is recommended that the board pursue alternative revenue sources such as assessments on parcels throughout the county to fund E911 services. This could be done by the fiscal court on behalf of the board. KRS 67.083 gives local government the authority and flexibility to provide and finance a broad range of governmental functions and KRS 65.760 provides for alternative methods of funding the operation of an enhanced 911 emergency service.

For example, Kenton County, Kentucky recently consolidated several city communications centers within its county operated E911 center and imposed an annual per parcel service fee of \$80 in 2012, which was later changed to \$60 per parcel in 2013. This fee fully funds the operations of the combined center and appears to be a very viable alternative revenue source to replace the telephone surcharge and real estate tax support currently in use by Paducah/McCracken County. The two center models shown below for board consideration contain an alternative funding option which incorporates a mechanism such as the per parcel fee to bring annual center funding up to 50% of expenditures before partner funding is applied. The board may want to investigate using an alternative fee methodology to fully fund the center and to repeal the current land-line fee.

With the selection of a new Director and the re-alignment of staff, along with development of a personnel manual and supervisory training, the center should experience a more stable

atmosphere. One of the issues that was noted in the visit and supported by the interviews was a lack of training and consistency as it relates to the policies and procedures for center operations and administration. Personnel issues will be able to be dealt with in a more rapid and effective manner with either model shown below which will create a better working atmosphere. The most ideal situation would be for the center to become a city department with all employees falling under the city HR handbook and the director responsible to the city manager. This would provide greater accountability, immediate oversight and follow through on personnel matters than is currently the case which will significantly reduce adverse personnel liability exposure and create for a more harmonious working environment.

In both cases offered for board consideration below, an economic model has been developed which contemplates the adoption of a five year master plan. This is a critical need that must be addressed as soon as possible with Fiscal Year 2015 being the initial year of the plan. Such a plan should incorporate annual capital equipment replacement as well as a potential reserve fund for future large purchases. Should the EMS service consolidate its dispatch operation with the center, KRS 65.7631 provides for a one time reimbursement of \$100,000 towards the cost of consolidation. This funding source is incorporated into the second model below. The CRMS board may also, under KRS 65.7631, disburse funding for direct or matching grants to improve E911 services. It is recommended that the board eliminate the assistant director position which will provide an annual recurring personal services savings of \$80,000. This could be used as a recurring revenue source for capital replacement or one-time capital expenditures. Additionally, the \$50,000 currently budgeted for overtime could be reduced by approximately half in model one and eliminated in model two. This funding could be re-allocated as a recurring source of capital funding should the board desire to do so. This will be discussed below but was not incorporated into the economic models.

### **3.1.3 Staffing**

After reviewing the current staffing, two models are presented for board consideration that will provide additional personnel per shift. With both models, there are additional staff on duty which will allow for training, provide some depth for sick/vacation coverage and provide more staff to handle the current and future call workload. Another recommendation is that the present county animal control calls to the Communication Center be re-routed to either the Animal Center itself or a recording that could be answered when staff is available. Any call that is emergent in nature (dog bites etc.) would be directed to call 911. This will add significant capacity as the volume of animal control calls is very close to Paducah's fire department call volume (Figure 10) and these calls do require significant staff time per call.

As mentioned above, it is recommended that the position of assistant director be eliminated. In addition, it is further recommended that there be only one "lead" telecommunicator (working supervisor) per shift. In each of the two models presented below, shift personnel will work a varied schedule that is approximately 12 hours in length. There are four platoons, two days and

two nights that alternate. Hourly pay rates would need to be changed to reflect the addition of some scheduled overtime during each pay period so that the annual salary remains the same as it is currently. In both cases, there are only three positions that work 8am-5pm Monday through Friday; the director, the administrative secretary and the database administrator. All other positions work some type of shift schedule.

### 3.2 Model One - Reallocation of Existing Resources

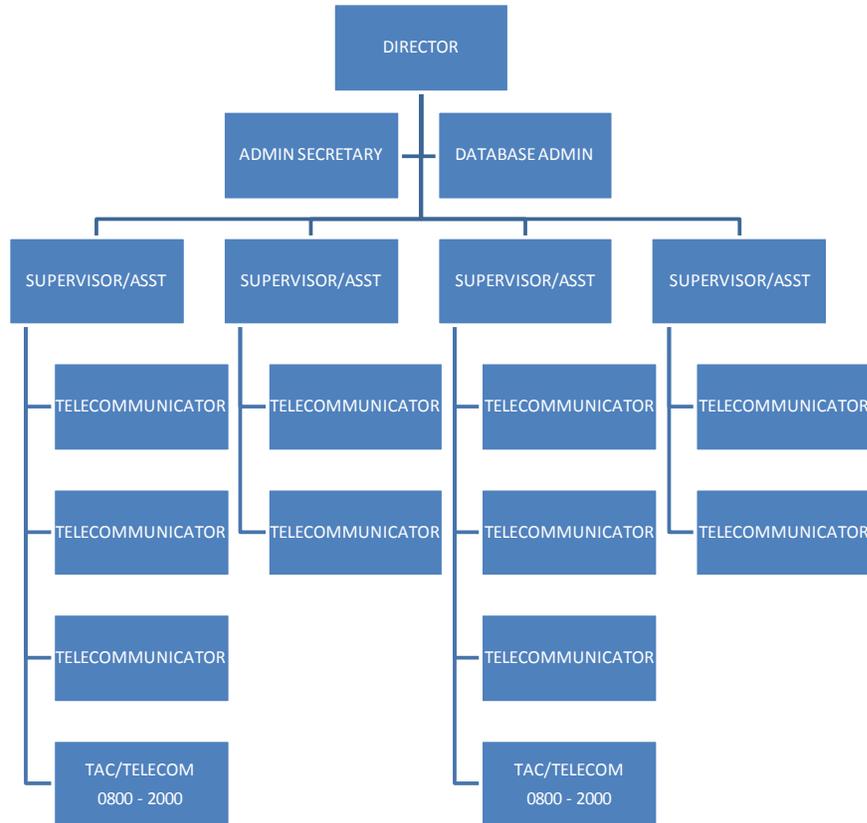


Figure 19 – Model One proposed organizational structure

Figure 19 shows the proposed organizational structure for model one, which is essentially a reorganization of the existing staffing level with one exception. As in both cases, it is recommended that the position of assistant director be eliminated. This structure would also eliminate the 8am-5pm Monday through Friday TAC position. The duties of the TAC position would be assigned to the day shift TAC/Telecom which works days from 0800-2000 hours. There are currently 22 funded positions within the communications center, including the director and assistant director positions. Model one would reduce that to 21 FTEs with the \$80,000 loaded assistant director salary used for capital replacement. This structure would also have two (2) additional telecommunicators that could be used as relief or training coverage and

should also reduce the annual overtime budget. They are not shown on the organizational chart.

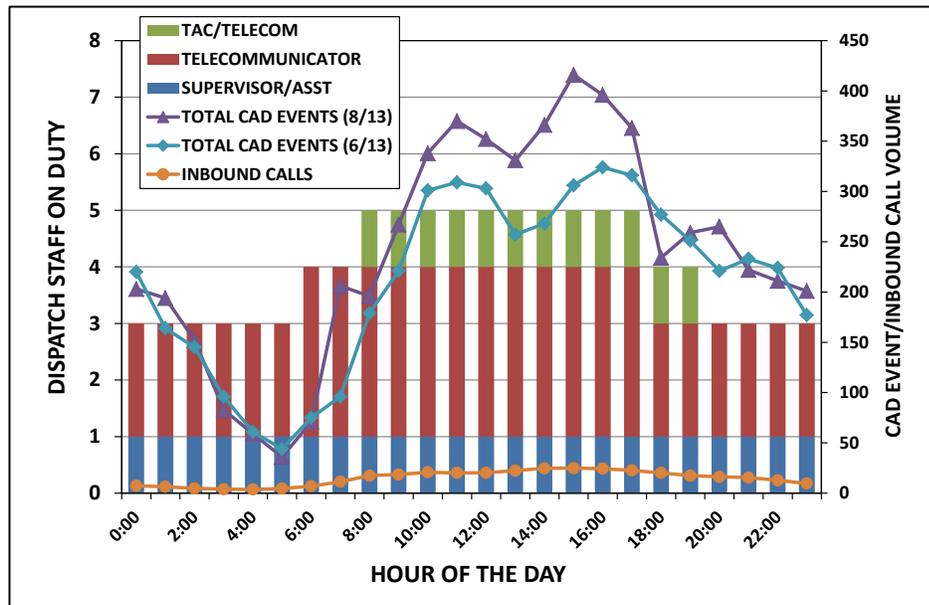


Figure 20 – Model One staffing by hour of the day with TAC/telecom position

Model one uses existing staff and would consist of the following positions:

- Director
- Administrative Staff Assistant
- Data Base Administrator
- Four (4) Supervisors
- Fourteen (14) Telecommunicators

The shift personnel would work the following platoons and shifts:

A-B Days consisting of:

- One (1) Supervisor                      0600-1800 hours
- Three (3) Telecommunicators      0600-1800 hours
- One (1) TAC/Telecom                 0800-2000 hours

A-B Nights consisting of:

- One (1) Supervisor                      1800-0600 hours
- Three (2) Telecommunicators      1800-0600 hours

Figure 20 shows how the staffing works hour-by-hour by shift position and relative to the hourly CAD event call load for June and August of 2013 (an indication of annual workload by hour of the day), along with incoming telephone call volume. As stated, there are two additional telecommunicators who can be used as floats to cover sick/vacation or training time.

Figure 21 is a notional 4-platoon schedule for communications center shift personnel including telecommunicators, calltakers (see Model Two), TAC operators and supervisors. Personnel in each platoon could be staggered slightly as desired to better match call load variability throughout the day.

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
1 "B" DAYS 0545-1800 HOURS "B" NIGHTS 1745-0600 HOURS	2 "A" DAYS 0545-1800 HOURS "A" NIGHTS 1745-0600 HOURS	3 "A" DAYS 0545-1800 HOURS "A" NIGHTS 1745-0600 HOURS	4 "B" DAYS 0545-1800 HOURS "B" NIGHTS 1745-0600 HOURS	5 "B" DAYS 0545-1800 HOURS "B" NIGHTS 1745-0600 HOURS	6 "A" DAYS 0545-1800 HOURS "A" NIGHTS 1745-0600 HOURS	7 "A" DAYS 0545-1800 HOURS "A" NIGHTS 1745-0600 HOURS
8 "B" DAYS 0545-1800 HOURS "B" NIGHTS 1745-0600 HOURS	9 "B" DAYS 0545-1800 HOURS "B" NIGHTS 1745-0600 HOURS	10 "A" DAYS 0545-1800 HOURS "A" NIGHTS 1745-0600 HOURS	11 "A" DAYS 0545-1800 HOURS "A" NIGHTS 1745-0600 HOURS	12 "B" DAYS 0545-1800 HOURS "B" NIGHTS 1745-0600 HOURS	13 "B" DAYS 0545-1800 HOURS "B" NIGHTS 1745-0600 HOURS	14 "A" DAYS 0545-1800 HOURS "A" NIGHTS 1745-0600 HOURS
15 "A" DAYS 0545-1800 HOURS "A" NIGHTS 1745-0600 HOURS	16 "B" DAYS 0545-1800 HOURS "B" NIGHTS 1745-0600 HOURS	17 "B" DAYS 0545-1800 HOURS "B" NIGHTS 1745-0600 HOURS	18 "A" DAYS 0545-1800 HOURS "A" NIGHTS 1745-0600 HOURS	19 "A" DAYS 0545-1800 HOURS "A" NIGHTS 1745-0600 HOURS	20 "B" DAYS 0545-1800 HOURS "B" NIGHTS 1745-0600 HOURS	21 "B" DAYS 0545-1800 HOURS "B" NIGHTS 1745-0600 HOURS
22 "A" DAYS 0545-1800 HOURS "A" NIGHTS 1745-0600 HOURS	23 "A" DAYS 0545-1800 HOURS "A" NIGHTS 1745-0600 HOURS	24 "B" DAYS 0545-1800 HOURS "B" NIGHTS 1745-0600 HOURS	25 "B" DAYS 0545-1800 HOURS "B" NIGHTS 1745-0600 HOURS	26 "A" DAYS 0545-1800 HOURS "A" NIGHTS 1745-0600 HOURS	27 "A" DAYS 0545-1800 HOURS "A" NIGHTS 1745-0600 HOURS	28 "B" DAYS 0545-1800 HOURS "B" NIGHTS 1745-0600 HOURS

Figure 21 – Notional 4-platoon shift schedule

Table 5 is the economic model for the first case reconfiguring existing staff. The parameters are the same as those discussed for the economic model expressing the current center operation. Partner contributions are calculated using the algorithm set forth in the interlocal agreement following application of any revenues received. The “economic variables” are estimated CAD events projected based upon historical change since 2007 and are used to determine proportionate share for city and county financial partners. For example, county calls are decreasing at a rate of 1.4% per year while city calls are increasing at a rate of 3% per year. E911 CAD events are increasing at a rate of 3.9% per year.

The annual price level adjustment of 4% is based upon average annual increases in center operating costs since 2007. The base year city and county contributions are higher in Model One and Two than in the status quo model because each contemplate using estimated cash reserves in excess of the 12% operating reserve from FY 2014 for capital expenditures in year one (FY 2015), rather than to reduce partner contributions for the FY 2014 base year.

Plan Year	Base Year	Year 1	Year 2	Year 3	Year 4	Year 5
Fiscal Year	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19
<b>ECONOMIC VARIABLES</b>						
Total Calls Dispatched	85,913	86,986	88,112	89,291	90,526	91,817
County Calls Dispatched	33,763	33,287	32,818	32,355	31,899	31,449
City Calls Dispatched	52,150	53,699	55,294	56,936	58,627	60,368
911 Calls Dispatched	15,856	16,466	17,100	17,758	18,442	19,152
Price Level Adjustment		4.0%	4.0%	4.0%	4.0%	4.0%
<b>REVENUES</b>						
County Contribution	426,876	427,553	478,483	504,134	530,174	556,639
City Contribution	569,225	585,340	672,187	726,349	782,976	842,149
Total Partner Contribution	996,100	1,070,569	1,155,776	1,235,943	1,318,978	1,404,996
Telephone Surcharge, CMRS Fees, Other	692,500	685,575	678,719	671,932	665,213	658,561
Loan/Lease Purchase Proceeds	-	-	-	-	-	-
Other Revenue Sources		100,000	-	-	-	-
Total Other Revenue Sources	692,500	785,575	678,719	671,932	665,213	658,561
<b>Total Revenues</b>	<b>1,688,600</b>	<b>1,856,144</b>	<b>1,834,495</b>	<b>1,907,875</b>	<b>1,984,191</b>	<b>2,063,557</b>
<b>EXPENDITURES</b>						
Current Personnel	1,382,720	1,438,029	1,495,550	1,555,372	1,617,587	1,682,290
Current Operating	305,880	318,115	330,840	344,074	357,837	372,150
Current Capital Replacement	-	-	-	-	-	-
New Capital Projects	-	183,200	86,528	89,989	93,589	97,332
Debt Service/Lease Purchase Payments	-	-	-	-	-	-
Current Reserve	202,632	202,632	210,737	219,166	227,933	237,050
Telecommunicator Position (Equipped)	-	-	-	-	-	-
Cumulative FTE	-	-	-	-	-	-
Cumulative New Telecommunicator Position Operating	-	-	-	-	-	-
Other Expenditures or Adjustments		(83,200)	(86,528)	(89,989)	(93,589)	(97,332)
<b>Total Expenditures</b>	<b>1,688,600</b>	<b>1,856,144</b>	<b>1,834,495</b>	<b>1,907,875</b>	<b>1,984,191</b>	<b>2,063,557</b>
<b>DECISION UNITS AND UNIT COSTS</b>						
Telecommunicator Position (Equipped)						
FTE (Telecommunicator)						
New Telecommunicator Position Operating						
Cumulative New FTE (Telecommunicator)		-	-	-	-	-
Cumulative New Telecommunicator Position Operating		-	-	-	-	-
Cumulative Total FTE (Shift positions)	17	17	17	17	17	17
Cumulative Peak Telecommunicator Positions	5	5	5	5	5	5
Telecommunicator Position (Equipped)	50,000	52,000	54,080	56,243	58,493	60,833
FTE (Operating)	56,000	58,240	60,570	62,993	65,513	68,134
Per Position (Operating)	5,000	5,200	5,408	5,624	5,849	6,083
<b>SERVICE LEVEL STATISTICS</b>						
Total Dispatches/Telecommunicator	5054	5117	5183	5252	5325	5401
911 Dispatches/Telecommunicator	933	969	1006	1045	1085	1127

Table 5 – Model One optimizing use of existing resources

The telephone and CMRS fee revenue line decreases annually based upon historical annual decreases of 1%. The current personnel line item includes all currently funded positions including the assistant director. The recommended deletion of the assistant director position (\$80,000 base year reduction) is shown as a negative number in the other expenditure or adjustment line item. This amount is added back in at the capital projects line item. The current reserve is shown each year as 12% of operating cost but is not a recurring expenditure except for that incremental amount in excess of the prior year carried forward reserve amount. It should be noted that total number of shift FTEs and telecommunicator positions remains the same as the base case at 17 and 5; respectively.

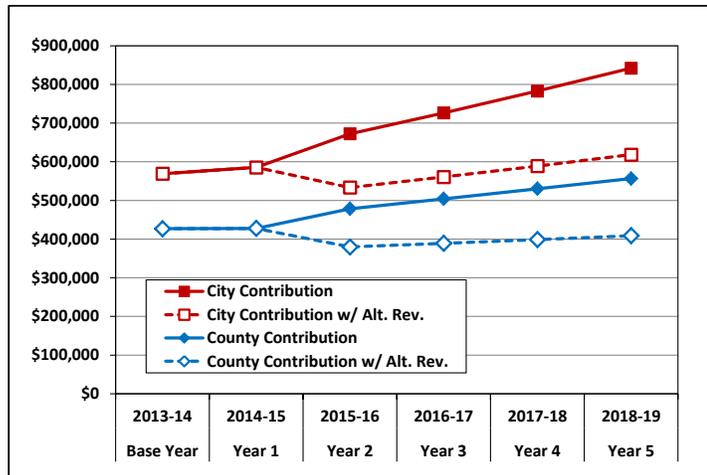


Figure 22 – Comparison of city/county Model One contributions with and without utilization of an alternative revenue source funding 50% of center operations

Figure 22 summarizes the annual changes to the city and county contributions over time. The solid line represents the model shown in Table 4 while the dashed line represents that model run with an alternative revenue source which limits partner funding each year to 50% of the total expenditure budget. While no specific source is identified, a possible per parcel assessment source was discussed earlier as a viable option as is used to fund the Kenton County, Kentucky consolidated center. It is anticipated for modeling purposes that any new revenue source would not take effect until year two of the five year plan in order to give the city and county time to research and implement such a revenue source.

For comparison purposes with the status quo model, the city and county contributions would not be expected to differ. However, there would be a revenue stream for capital replacement in Model One as well as a more efficient utilization of existing staff. As previously mentioned, the overtime budget could also be reduced by at least half, with the savings either returned to the parties or utilized as additional capital funding. The major difference between the status quo and Model One is if an alternate funding mechanism is added. The city contribution will rise to approximately \$620,000 rather than \$840,000 by year five (FY 2019); a savings of \$220,000 in general revenue contribution. The county contribution will rise to approximately \$410,000 rather than \$560,000 by year five (FY 2019); a recurring savings of \$150,000 in general revenue. The partners could even utilize such an alternative revenue source to fully fund the center rather than general revenues and telephone surcharge.

### 3.3 Model Two - Consolidation with Mercy Ambulance EMS Dispatch

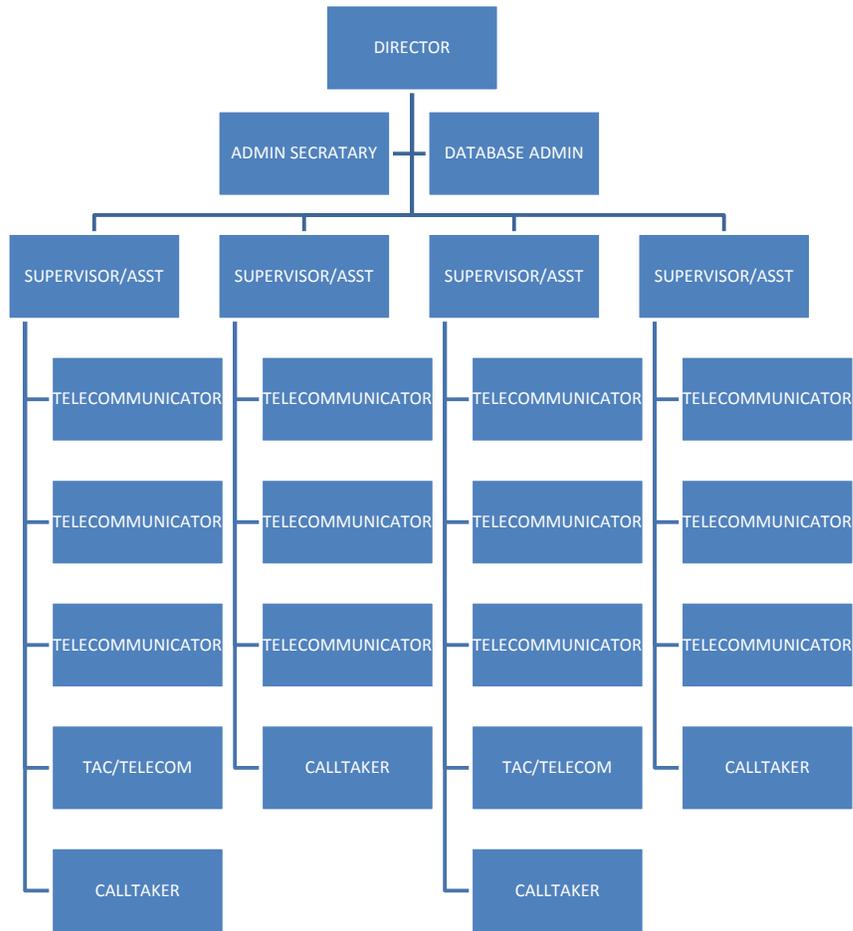


Figure 23 – Model Two proposed organizational structure with EMS dispatch integrated

Figure 23 shows the proposed organizational structure for model two which contemplates integrating the Mercy Regional EMS Ambulance dispatch function within the center operation. As with Case one, it is recommended that the position of assistant director be eliminated with the \$80,000 loaded assistant director salary used for capital replacement. This structure would also eliminate the 8am-5pm Monday through Friday TAC position. The duties of the TAC position would be assigned to the day shift TAC/Telecom position which works days from 0800-2000 hours. There are currently 22 funded positions within the communications center, including the director and assistant director positions. With elimination of the assistant director position, Model two would add four additional shift FTEs as call-takers for a total staff count of 25 versus 21 with Model one.

Model two incorporates dedicated call takers into the staffing model for the center and adds an additional dispatch position 24 hours/day, 7 days/week by adding an additional FTE to each of

the four platoons through consolidation. The call takers would handle most incoming E911 calls for service with rollover to cross-trained telecommunicators as needed. One of the telecommunicators from each day shift would serve as a TAC operator as in Model one. Additionally, as with Model one, the staff will work 12 hour shifts. With the additional budgeted positions, each platoon would be able to reduce by one to minimum staffing level for sick/vacation coverage and overtime could be virtually eliminated. This savings is not shown in the economic model but could either be returned as a recurring savings or used as a recurring capital replacement source.

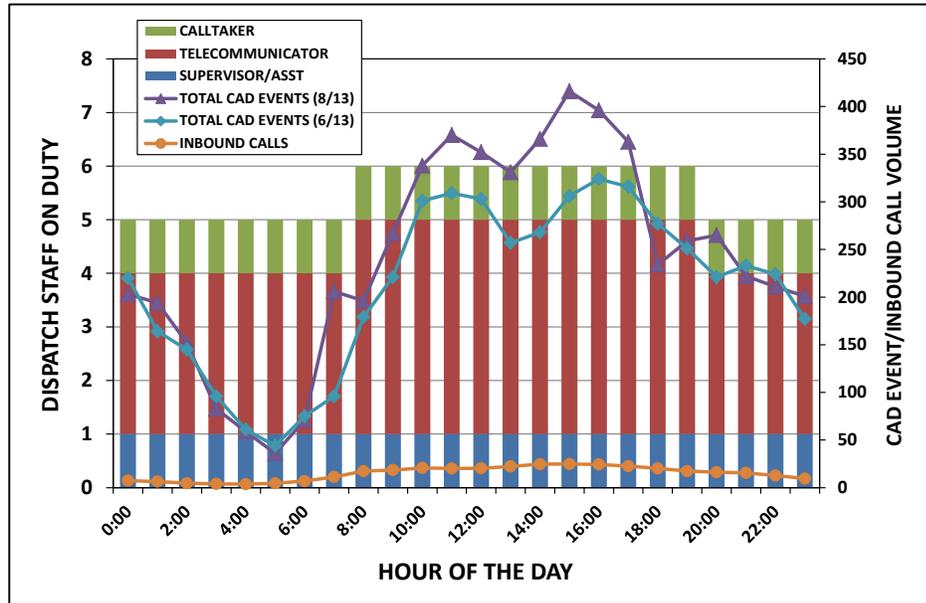


Figure 24 – Model Two staffing by hour of the day with EMS dispatch integrated

Model two uses existing staff plus four added FTEs from Mercy Regional EMS Ambulance dispatch and would consist of the following positions:

- Director
- Administrative Staff Assistant
- Database Administrator
- Four (4) Supervisors
- Fourteen (14) Telecommunicators
- Four (4) Call Takers

The shift personnel would work the following platoons and shifts:

A-B Days would consist of:

One (1) Supervisor	0600-1800 hours
Three (3) Telecommunicators	0600-1800 hours
One (1) TAC/Telecom	0800-2000 hours
One (1) Call Taker	0600-1800 hours

A-B Nights would consist of:

One (1) Supervisor	1800-0600 hours
Four (3) Telecommunicators	1800-0600 hours
One (1) Call Taker	1800-0600 hours

Figure 24 shows how the staffing works hour-by-hour by shift position and relative to the hourly CAD event call load for June and August of 2013 (an indication of annual workload by hour of the day), along with incoming telephone call volume. There is an additional CAD position associated with this model that must be constructed. There are sufficient budgeted positions that staffing levels could drop by one on each platoon to accommodate sick/vacation coverage and still provide sufficient depth to handle current and expected five year workload. This structure would increase staffing and allow the supervisors to more easily handle the administrative duties and provide training to their respective staff.

Table 6 is the economic model for the second case which utilizes existing staff and incorporates four additional FTEs to serve as call-takers with the integration of the ambulance dispatch function. The economic variables are as previously described as are expenditures with the exception of the new capital replacement line item. As previously discussed, KRS 65.7631 provides for a one time reimbursement of \$100,000 towards the cost of consolidating a non-E911 dispatch center with an E911 center which would be the case were Mercy Regional EMS Ambulance dispatch to consolidate with the Paducah-McCracken County center. This is shown as an expenditure in year one of the model and is added to the additional expenditures funded by one time cash forward of \$100,000 from FY 2014 and recurring revenue from elimination of the assistant director position.

The section of the model called decision units shows the addition of one more CAD work station at an estimated total cost of \$52,000 with a recurring operating cost of \$5,200 for the first year along with the annual recurring cost of four additional FTEs needed to staff that position 24 hours/day and 7 days/week. Note that the cumulative new FTE (telecommunicator) tally is increased by 4 and the cumulative peak positions goes from 5 to 6 while the total shift positions

goes from 17 to 21. This also impacts the service level statistics in a positive manner as shown at the bottom of the model.

Plan Year	Base Year	Year 1	Year 2	Year 3	Year 4	Year 5
Fiscal Year	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19
<b><u>ECONOMIC VARIABLES</u></b>						
Total Calls Dispatched	85,913	86,986	88,112	89,291	90,526	91,817
County Calls Dispatched	33,763	33,287	32,818	32,355	31,899	31,449
City Calls Dispatched	52,150	53,699	55,294	56,936	58,627	60,368
911 Calls Dispatched	15,856	16,466	17,100	17,758	18,442	19,152
Price Level Adjustment		4.0%	4.0%	4.0%	4.0%	4.0%
<b><u>REVENUES</u></b>						
County Contribution	426,876	383,045	436,040	458,997	482,309	506,007
City Contribution	569,225	524,406	612,562	661,317	712,288	765,547
Total Partner Contribution	996,100	1,160,729	1,195,464	1,277,219	1,361,907	1,449,643
Telephone Surcharge, CMRS Fees, Other	692,500	685,575	678,719	671,932	665,213	658,561
Loan/Lease Purchase Proceeds	-	-	-	-	-	-
Other Revenue Sources		400,000	208,000	216,320	224,973	233,972
Total Other Revenue Sources	692,500	1,085,575	886,719	888,252	890,186	892,533
<b>Total Revenues</b>	<b>1,688,600</b>	<b>2,246,304</b>	<b>2,082,183</b>	<b>2,165,471</b>	<b>2,252,093</b>	<b>2,342,176</b>
<b><u>EXPENDITURES</u></b>						
Current Personnel	1,382,720	1,438,029	1,495,550	1,555,372	1,617,587	1,682,290
Current Operating	305,880	318,115	330,840	344,074	357,837	372,150
Current Capital Replacement	-	-	-	-	-	-
New Capital Projects	-	283,200	86,528	89,989	93,589	97,332
Debt Service/Lease Purchase Payments	-	-	-	-	-	-
Current Reserve	202,632	202,632	210,737	219,166	227,933	237,050
Telecommunicator Position (Equipped)		52,000	-	-	-	-
Cumulative FTE		232,960	242,280	251,972	262,052	272,536
Cumulative New Telecommunicator Position Operating		5,200	5,408	5,624	5,849	6,083
Other Expenditures or Adjustments		(83,200)	(86,528)	(89,989)	(93,589)	(97,332)
<b>Total Expenditures</b>	<b>1,688,600</b>	<b>2,246,304</b>	<b>2,082,183</b>	<b>2,165,471</b>	<b>2,252,092</b>	<b>2,342,176</b>
<b><u>DECISION UNITS AND UNIT COSTS</u></b>						
Telecommunicator Position (Equipped)		1				
FTE (Telecommunicator)		4				
New Telecommunicator Position Operating		1				
Cumulative New FTE (Telecommunicator)		4	4	4	4	4
Cumulative New Telecommunicator Position Operating		1	1	1	1	1
Cumulative Total FTE (Shift positions)	17	21	21	21	21	21
Cumulative Peak Telecommunicator Positions	5	6	6	6	6	6
Telecommunicator Position (Equipped)	50,000	52,000	54,080	56,243	58,493	60,833
FTE (Operating)	56,000	58,240	60,570	62,993	65,513	68,134
Per Position (Operating)	5,000	5,200	5,408	5,624	5,849	6,083
<b><u>SERVICE LEVEL STATISTICS</u></b>						
Total Dispatches/Telecommunicator	5054	4142	4196	4252	4311	4372
911 Dispatches/Telecommunicator	933	784	814	846	878	912

Table 6 – Model Two consolidating with Mercy Ambulance EMS dispatch

The other revenue sources line item reflects \$100,000 in cash carried forward from FY 2014, the one-time \$100,000 reimbursement from the state and an estimated \$200,000 from Mercy Regional EMS Ambulance service reflecting their share of center operations for year one of the plan. This is based upon approximated figures from Mercy staff indicating that their annual operating cost for dispatch which includes five FTEs and other associated costs is at least \$220,000. The average center telecommunicator cost is higher than that of Mercy and the

proposed charge represents the approximate cost of the four FTEs that would need to be added to accommodate ambulance dispatch. This would effectively be the call-taker position. Mercy runs approximately 14,000 calls annually, of which approximately 7,500 are generated by E911 while the remaining calls are for interfacility transports. The bulk of E911 calls responded to by fire rescue are medical calls. Therefore, the bulk of the additional E911 calls would already have been handled by center staff. While the consolidation does not represent a major cost savings, it does provide for much greater system efficiency and safety at the best cost. The governance portion of the recommendations already provides for Mercy Regional to have a seat on the governing board. Depending on how the board wishes to move forward with funding, the model may need to be revised.

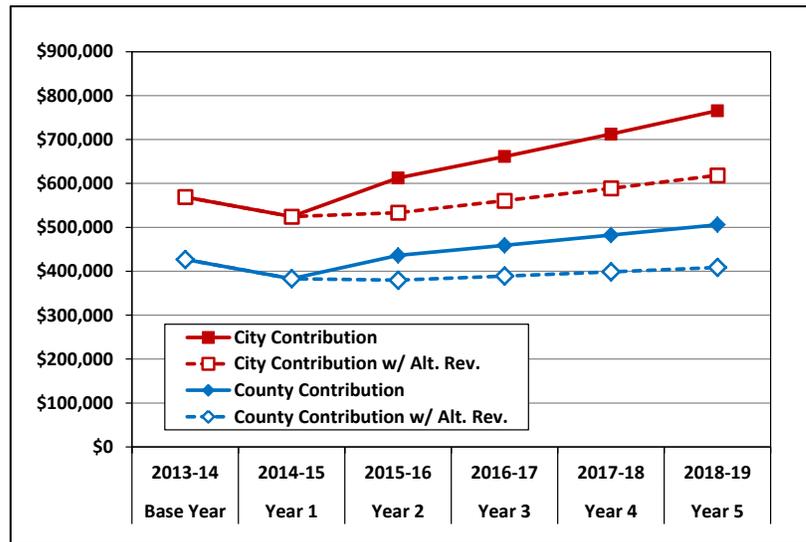


Figure 25 – Comparison of city/county Model Two contributions with and without an alternative revenue source funding 50% of center operations

Figure 25 summarizes the annual changes to the city and county contributions over time. The solid line represents the model shown in Table 6 while the dashed line represents that model run with an alternative revenue source which limits partner funding each year to 50% of the total expenditure budget. While no specific source is identified, a possible per parcel assessment source was discussed earlier as a viable option. It is anticipated that, for modeling purposes, any new revenue source would not take effect until year two of the five year plan in order to give the city and county time to research and implement such a revenue source.

For comparison purposes, the status quo and Model one city and county contributions remain the same (with the exception of adding an alternative revenue source to Model one which reduces costs) with the major difference being that Model one is a more efficient use of existing personnel and financial resources providing for a capital replacement funding stream which does not currently exist. However, Model two provides a significantly higher level of service by

consolidating resources with Mercy Regional EMS Ambulance service at a reduced cost to Mercy and a much lower cost to city and county partners than if they had to fund the extra FTEs on their own. Additionally, some additional one-time revenue is available from the state to assist with costs of the transition. Further, the overtime budget could be virtually eliminated or merely converted to an additional recurring capital replacement revenue source. Without the alternative revenue source contemplated, the city contribution in the status quo and Model one case rises to \$840,000 in year five versus \$765,000 in Model two while the county contribution in the first case rises to \$560,000 by year five versus \$510,000 in Model two. When considering an alternative revenue source as discussed, the city contribution for Model two drops to \$618,000 by year five while the county contribution drops to \$410,000. As already stated, the partners could even consider fully funding the costs of the communications center with an alternative revenue source.

### **3.3.1 Communication**

Policies and procedures should be put into electronic form and placed where all personnel can access them. As new policies are implemented from the field, communications staff should be involved in the discussions to allow for dispatch input. Training of communications staff and field public safety staff should occur well before any changes are made.

It is recommended that internal staff have periodic staff meetings or briefings to allow for transfer of important information. For external communication, a Communications/Operations committee could be set up to discuss operational issues on a routine basis. Any policy change would be discussed with staff and then a recommendation forwarded to the full Board for approval.

### **3.3.2 Future needs**

Consideration should be given to a new building with more space to include room for expansion. This would include items such as a larger break room, additional office space and include the additional space for technology. Staff could visit various other communications centers to develop a plan that best fits with Paducah-McCracken County public safety future needs.

In the short-term, some changes will need to be made to the existing center. There should be a secure perimeter fence with keyed access for staff only to parking areas that are well lighted and monitored with security cameras. The conference room area should be segmented into office space and the current director's office could then be incorporated into the secure communications floor. Conference space could be provided to the Board by the city. Access to the floor should be by secure card access only. New carpeting and paint along with different lighting could give a relatively low cost upgrade to the facility and give it a few more years while funds are built for a new building.

## **3.4 Technology / Infrastructure**

### **3.4.1 CAD**

The newest version of CAD is windows-based and allows for more flexibility and functionality. In discussions with the CAD vendor the approximate cost of upgrading the CAD to the newer version for dispatch and mobile data terminals would be approximately \$250,000.

Consideration should also be given to consolidating the EMS dispatch in to the CAD system presently being used by the Communications Center. This would eliminate the need for double entry of calls which would create a more efficient work flow.

### **3.4.2 Radio Systems**

It is recommended that all parties form a committee to discuss future radio needs. Because the departments are on separate radio systems, the radio system provider should be included to assist with technical issues and provide options for each user to increase interoperability between the systems. This should also include the EMS provider should they be consolidated into the Communications Center.

### **3.4.3 Station/Unit alerting**

It is recommended that staff relocate the existing Zetron alerting modules to specific positions for easy access or look into doing alerting from the 800 MHz radio system. If the use of the radio system is an option, it would eliminate the two tone sequential paging which takes about two seconds per page and allow for multiple units to be paged simultaneously saving time.

### **3.4.4 911 Phone Systems**

Based on information from staff, there is still some time left with this system but it will need to be updated in the near future (within the five year time frame of the economic models discussed above). The need for this upgrade is also being dictated by the fact that the phone system is on a Microsoft XP platform and will not be supported by Microsoft in the near future.

### **3.4.5 Supervisor/6<sup>th</sup> position**

The sixth position on the dispatch floor needs to be set up as a fully operational position.

## 4.0 Conclusion

Although total incoming phone calls to the center have been steadily declining since 2007, driven primarily by annual decreases in non-emergency calls, the number of E911 calls have been rising steadily, albeit at a slower rate, which translates to an annual increase in E911 sourced incidents handled by the center and greater workload on telecommunicators. The largest percentage of incidents logged by the center is still self-dispatched calls which do not require the level of resources that E911-sourced calls require. Atypical of many E911 communications centers in the nation, the Paducah-McCracken E911 center dispatches for the county animal control agency; an annual workload rivaling that of the Paducah fire department and exceeding that of the county fire departments. It is recommended that this practice be discontinued which will add emergency incident handling capacity to the center.

A significant data point used to justify the need for additional telecommunicators is an ISO evaluation of the West McCracken CO FD based upon an outdated methodology (2007 grading schedule). That survey uses a table calling for six telecommunicators on duty at all times based upon total incidents handled by the center. However, most of the incidents identified are not considered alarms but rather are law enforcement self-dispatches that are typically non-emergency events requiring little to no telecommunicator involvement. At worst, a more accurate use of this table would suggest a maximum of four dispatchers on duty; not six.

In any case, the board should instead use NFPA 1221 (as does the most recent ISO grading schedule adopted in 2013) which provides a metrics-based approach to communications center staffing. If the center meets those metrics (call answering and processing time) then ISO should consider the center as adequately staffed. A reconfiguration of existing staff resources as shown in Model One or the consolidation with Mercy EMS dispatch as shown in Model Two should provide more than adequate resources to handle existing and future workload for the next several years. Further, the number of on duty dispatchers is only 3% of the total points comprising the referenced ISO PPC rating (the center received almost 2/3 of allowable credit in any case). While the ISO study did raise communications center staffing as an issue, the study should not be used as a credible data point to justify a staffing model.

The largest contributors to communications center incident volume are the Paducah police department and McCracken County Sheriff's office. While the volume for law enforcement is high, most of these incidents are self-dispatched which, as stated, do not require the level of telecommunicator support that an E911 incident requires. The annual volume for Paducah PD is increasing while that for McCracken Sheriff is declining. This trend is reflected in the overall city-county proportionate workload and is reflected in the partner funding split, part of which is workload based. Fire department incidents are increasing which likely reflects an increase in EMS related calls. Since fire departments and ambulance agencies both respond to many of the same calls, integration of Mercy EMS dispatch and the center would leverage resources and provide more depth with reduced, combined costs. Based upon positive feedback from the

Mercy Regional ambulance service director, Almont recommends that the board consider moving forward with Model Two.

Total annual revenues have been declining since 2007, a trend largely driven by the rapidly declining proportion of landline to cellular phones in use. Although CMRS revenue for cellular phones from the state has increased through time, it has not kept pace with the decrease in revenue from local charges on landlines and the increased center expenditure budget. The interlocal agreement calls for landline charges to be increased when revenues fund less than 50% of the expenditure budget; a point that was reached in 2011. Increases in a diminishing revenue base will not keep pace with expenditures in any case. Even with no addition of staff, the current trend of declining revenue versus increasing expense is not sustainable without significant infusion of funds from the financial partners. Further, no long-term master plan to include capital replacement or improvements exists.

An economic model is provided that illustrates how a capital funding program could be built around a reconfigured center using existing staff minus the assistant director position, or a reconfigured center integrated with staff from the Mercy ambulance dispatch operation were it to be consolidated with the center. Further, an alternative funding mechanism (per parcel assessment methodology) is postulated that is currently in use in another Kentucky county which could either augment the current revenue sources to bring the revenue back in line with the 50% guideline or totally replace the current funding sources which may be a better option in the long-term; particularly in the case of Model Two.

Several capital needs have been identified by both board members and center staff. Although both groups identified the current building as at or very near capacity and not ideally configured, it would require significant funding to replace it with either a new or remodeled existing building. This should probably be a longer term goal (5-10 years) with some minor renovation of the existing building funded in the near-term. At a minimum, exterior carded access to fenced, lighted parking is needed. Interior renovation such as new carpet, painting and some room reconfiguration is recommended. The CAD system needs to be upgraded to the most recent, web-based version and the phone system will need to be replaced within 3-5 years. Both models presented for board consideration provide varying capacity for annual capital replacement and/or one-time projects.

Although the current board is collegial and functions together well, its size makes it cumbersome and the major goal of its composition (law enforcement heavy due to LINK/NCIC contractual requirement) could still be accomplished with a smaller board. Further, in order to accommodate an EMS dispatch integration, Almont recommends a new board configured with no more than seven members; the McCracken County Sheriff or designee, a county fire department representative designated by the fiscal court, the Paducah police and fire chiefs, the Kentucky State Police post commander, the Commonwealth Attorney and the director of Mercy Regional Ambulance Service.

Additionally, many board members felt it would be beneficial for one or the other current financial partner (Paducah or McCracken County) to integrate the center into its structure. Since the city already provides most of the finance, human resource and other support for the center and most board members already feel as though the center essentially functions as a city department, Almont recommends that the board request that the center become a full city department with the director reporting to the city manager. In particular this would alleviate concerns about who is liable for any adverse personnel or other actions arising out of human resource or operational problems. The city manager should utilize the board in an executive search and for a hiring recommendation for a new director and should consider any recommendation to terminate the director for cause by majority vote of the board.

Several recommendations are provided further on governance but agreements with various users of the center should focus on ensuring proper customer service while leaving day-to-day administrative functions to the director as an employee of the city manager whose staff and operations function under the city HR manual and follow all appropriate policies and procedures as any other established department.