REPORT TO:
MONTGOMERY CO. OHIO PUBLIC SAFETY AGENCIES

9-1-1 PUBLIC SAFETY ANSWERING POINT (PSAP) "MUTUAL DISPATCH" FEASIBILITY STUDY & OPTIONS ANALYSIS

SEPTEMBER, 2006

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To be developed after final edit and formatting

Section I: Introduction and Scope of Services:

GeoComm Corporation was retained in March, 2006 by the Montgomery County Board of Commissioners acting on behalf of the County, the cities and the townships in the County as well as the County Sheriff's Office and the police departments in the County, all of which operate primary 911 dispatch centers, as well as several fire service providers in the County, which operate secondary 911 dispatch centers.

The purpose of this retainer was to conduct a **Feasibility Study and Options Development and Analysis** into the potential implementation of "Mutual Dispatch", or some form of a consolidation of Enhanced 911 **P**ublic **S**afety **A**nswering **P**oints (PSAPs or dispatch centers) operated by the several agencies referenced above.

This work was divided into three general phases, as follows:

Phase 1: Information collection. In this phase, there were three sub-phases.

Phase 1.1: GeoComm visited the County on March 1-2, 2006 for the Project Kick-Off meeting with members of the County's 911 community representing management of the 911 PSAPs, and for preliminary site visits to several of the PSAPs in the County.

Phase 1.2: On four occasions *(March 7 – 9 , March 29th , April 25 – 28 and May 24th)*, staff including GeoComm's CEO (Tom Grones), its Senior Consultant (Paul Linnee) and Associate Consultants (Ron Bloom, Norm Forshee and Rey Freeman) conducted in-depth site visits at all of the 17 PSAPs in the County. The County's radio system maintenance department and staff were also visited, as well as meetings with the Fire Chiefs and Police Chiefs Associations, the Mayors and Managers group, the Dayton Area Business Leadership Network, the Miami Valley Fire/EMS Alliance and officials from Miami County's 911 operation. We also interviewed officials from Hamilton, Wayne, Miami and Champaign Counties and the Ohio Highway patrol, as well as leaders from the Ohio APCO and NENA organizations, who have been and continue to be heavily involved in legislative activities regarding 911, wireless 911 and general PSAP issues. During each of these site visits, GeoComm visited with and interviewed PSAP operators and management personnel, inspected, inventoried, photographed and took videos of the communications equipment present and the general facilities, and spent several hours observing methods and procedures.

Phase 1.3 GeoComm developed and distributed detailed data collection surveys to each of the PSAP agencies under consideration here. The intent of this survey (sample attached as Appendix 3 to this report) was to collect comprehensive information regarding:

- Activity levels
- Budget and funding issues
- A wide range of personnel issues.

Phase 2: Options Development and Analysis:

2.1 Preliminary data compilation: During this phase, the survey results were tabulated and analyzed. Data collected from the PSAP visits and inventories were analyzed. These data and their analysis are included in this report. That data compilation section of the final report was distributed to all interested parties for agreement and consensus prior to the development and presentation of the options and any appropriate recommendations. The reason for this is that many of the conclusions, developed options and potential recommendations are *data driven*, and it is important that there be a high level of confidence in and concurrence with the data that will underpin this analysis.

During this phase, we also researched applicable State of Ohio laws relating to 911 and dispatch center management issues as well as any Public Utilities Commission of Ohio (PUCO) Rules and Regulations pertaining to the operation of 911 PSAPs, the collection, remittance, and spending of wired and wireless 911 surcharge revenues, and the required amended planning processes for the implementation of wireless enhanced 911 services. We also analyzed several aspects of Federal Communications Commission (FCC) licensing for radio systems in the agencies.

Phase 3: Development and Presentation of Feasibility Study & Options Analyses:

Following minor corrections to and acceptance by the steering committee of the data and data analysis contained in this document, the County's options were developed and analyzed, conclusions reached and any appropriate commentary developed. These are contained in this final report which is being delivered in September, 2006, followed up by formal presentations, as required.

Section II: Executive Summary:

The Study Process:

GeoComm was retained by Montgomery County for the purposes of examining 911 call answering and emergency communications dispatching services operated by the Montgomery County Sheriffs Department, thirteen city and township police departments, and the fire departments of the Dayton, Kettering and Washington Township, and to assess the feasibility and viability of consolidating some or all of these 911 call taking and/or dispatching services as provided today by these seventeen organizations, into something fewer than seventeen. The complete list of these 17 agencies and the populations they serve is as follows:

911 PSAP Agency	Pop. for which *wired* 911 calls are *initially* answered
Brookville Police	15,704
Centerville Police	23,024
Dayton Police	166,179
Dayton Fire	0
Englewood Police	30,937
Germantown Police	4,884
Huber Heights Police	38,212
Kettering Police	57,502
Kettering Fire	0
Miami Twsp. Police	45,593
Miamisburg Police	19,489
Montgomery Co. S.O.	113,203
Moraine Police	6,897
Oakwood Public Safety	8,817
Vandalia Police	14,603
Washington Twsp Fire	0
West Carrollton Fire	13,818
TOTALS	**558,862**

The Audience & the Format:

The audience of this report is intended to include a number of persons not necessarily familiar with all the nuts and bolts of public safety dispatching, 911 and related matters. The logic behind this is that at least some of the decision making bodies in the process of determining whether or not anything should come from this study will be bodies such as a City Council, Township Board or the County Board of Commissioners. For this reason, the report tries to explain the sometimes-esoteric concepts involved in this service in a manner that will aid understanding by non-daily practitioners. As such, it may be overly detailed for persons well aware of all of the nuances of public safety communications. For this we apologize. For much greater detail on each item referenced in this Executive Summary, we have inserted footnotes directing the reader to a page reference for the detailed discussion of that element.

The Environment:

In general, there are two different types of "911 agencies" detailed in this report. In the common parlance of the "911 Industry" we are talking about **PRIMARY** and **SECONDARY** PSAPs. A **PRIMARY** PSAP is the place where all wired (and some wireless, currently based on arrangements with the wireless carriers and the Highway Patrol) 911 calls dialed from a given geopolitical area are **initially answered**. For example, within the City limits of Vandalia, the Primary PSAP is the Vandalia Police dispatch center. A **SECONDARY** PSAP is a place to which a Primary PSAP transfers 911 calls (and their attendant data) for subsequent or more specific nature-of-event handling/dispatching. In Montgomery County, for example, there are three Secondary PSAPs to which some of the Primary law enforcement PSAPs regularly transfer 911 calls for more specific handling[1]. For example, the Centerville PD transfers fire calls to the Washington Township fire dispatch center. In some cases, a Primary PSAP may also wear the hat of a "secondary PSAP". For example, if a city or township police PSAP answers a 911 call requiring a fire response, and the responsible fire agency has made arrangements with the County Sheriff to serve as their dispatcher, the city or township PSAP would transfer this fire (or EMS) 911 call to the Sheriff's PSAP (normally a Primary PSAP) for processing and dispatch.

The Current Costs and Workloads:

Simply put, each year there are about 1.8 million calls for public safety service (of some level of urgency, which may or may not require or desire a public safety response) placed in the County, representing about 980,000 incidents to which responses are generated, answered by 192.5 people at 17 PSAPs, and about 45,000 of them are subsequently transferred elsewhere (secondary PSAP) for fire/EMS dispatch service, all at an overall annual cost of about $13 million.[2]

The Issues Bearing on Whether or Not and PSAP Consolidation or Mutual Dispatch Could Occur:

We spend considerable time developing an analysis of the several configuration options available to the County, starting with establishing the fundamental reasons for exploring such consolidations[3]

- Can PSAP services be delivered more cost effectively?
  - Yes.
- Could a change in PSAP count and configuration achieve greater efficiency and provide improved service to the public and the responders?
  - Yes
  - We provide a poignant news clipping about a tragedy in New Jersey where the configuration of 911 service provision directly contributed to the bad outcome. [4]

We then explore the general considerations that make up our analysis:

- Costs and funding sources/methods
  - We recommend two funding alternatives[5]
    - Enhanced surcharges on 911 lines
    - Countywide dedicated levy
  - We project total costs from a high of $17 million to a low of $8 million[6]

[1] *See discussions of Primary and Secondary PSAPs on pages 12-14, 119 and elsewhere throughout*
[2] *See Page 114 for summary table*
[3] *See Page 119*
[4] *See Page 121*
[5] *See Page 127*

- Operational Issues
  - Major impacts on operations if there is consolidation[7]
- Radio Communications Issues
  - Not too great an issue here due to County's previous work[8]
- 911 and Seven Digit Call Handling Issues[9]
  - Significant issues with 7 digit non-dispatch generating calls received at local PSAPs today.
  - Significant issues related to wireless 911 call processing
- Dispatch Point Data Collection Issues [10]
  - Not too great an issue here due to Sheriff's shared CAD system.
- Access to public safety facilities and related non-dispatching duties/roles. [11]
  - Major issues here regarding who would do what local dispatchers have always done if there are no local dispatchers anymore.
- PSAP Operations Supervision Issues. [12]
  - Little or none today, consolidation offers much improvement to this.
- "One Stage" vs. "Two Stage" Dispatch Configuration[13]
  - Two Stage is required in any large PSAP.
  - Minor issue in consolidation for Dayton PD as they already use this, but major work flow issue for other police agencies.
- "Cross Service" vs. "Service Specific" Dispatch Configuration[14]
  - Potentially a major issue for the fire/EMS service.
    - They lose their "only do fire dispatch all the time" dispatchers in more consolidated configurations.
    - But they do gain "dedicated positions always dedicated to fire dispatch", even if the persons sitting there are cross trained.
- "Civilian" vs. "Sworn" Dispatch staff[15]
  - Not a huge issue here as only DPD uses sworn now for radio and supervisory, DFD and MCSO for supervisory only.
- "Universal dispatchers" (staff who do all tasks) vs. "Single Skill Dispatchers"[16]
- State laws relating to PSAPS and/or their operations[17]
  - Potentially issue re: Statute 307.63 and what it says about the role of the Sheriff.
  - Some suggestions appear to be possibilities.
- What are the various options for consolidation of "mutual dispatch"?[18]
  - How we evaluated the various options:
    - ***How does the configuration being examined relate to:***
      - Changes in, improvements to or detractions from overall dispatch operations?

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[6] *See page 179*
[7] *See Page 175*
[8] *See Page 136*
[9] *See Page 142*
[10] *See Page 146*
[11] *See Page 148*
[12] *See Page 150*
[13] *See page 151*
[14] *See Page 154*
[15] *See Page 155*
[16] *See Page 156*
[17] *See Page157*
[18] *See Page 162*

- Radio communication issues?
- 911 and 7 digit call handling issues?
- Data collection issues?
- Public safety facilities access issues?
- PSAP supervision issues?
- "1 stage" vs. "2 stage" dispatching issues?
- "Cross Service" vs. "Service Specific" dispatching issues?
- Civilian vs. sworn staff issues?
- Universal call talker vs. Service Specific call taker issues?
- State law and regulation issues?"
- Management and control issues?
- Cost and funding issues?

- No Change Option
- One Big Consolidated PSAP Option[19]
  - About 95 FTE and an annual cost of $8.2 million
  - The highest level of coordination and efficiency
- Centrally Managed/Regional PSAP Option[20]
  - One Central and 4 Satellite PSAPs
    - Better process flow that today
    - Better supervision than today
    - More coordinated than today
    - Saves no more, costs more money
    - About 137 FTE and about $17.6 million per year
- "Ad Hoc Arrangements" Model[21]
  - Any entity reaches out to any other entity(ies) and forms whatever alliance and arrangements they can negotiate for the selling of dispatch services by one to the other(s).
  - Can't say what it would save or cost or how it would affect operational issues since the nature and specifics of each operation would be up to local control and discussion.
- "Virtual PSAP Consolidation" Model[22]
  - Means all 911, CAD and radio systems would be integrated and inter-operated as if everyone were in one big PSAP, except that they all stay in their original locations.
    - Offers the chance to greatly improve coordination and interoperations and efficiency in call processing and responses.
    - Saves no money whatsoever, and probably costs more money.
- Facilities and Equipment Issues[23]
- Back-up PSAP? (Footnote 23)
- Forming a Countywide Emergency Communications Coordinating Authority[24]
  - Perhaps the lynch pin in all forward movement

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[19] *See Page: 164*
[20] *See Page: 182*
[21] *See Page: 186*
[22] *See Page:186*
[23] *See Page: 189*
[24] *See Page: 190*

- Does not mandate or dictate physical consolidation, but would facilitate it as well as the potential of Virtual PSAP consolidation or Regional PSAPs.

We have also provided a link to a compilation of news articles from around the U.S. about how many of the nation's 3,066 counties are dealing with these same issues. [25]

In conclusion, we believe we have provided an honest accounting of today's environment from an operations and cost perspective, and addressed all of the relevant issues that impact on this decision making process.

Public Safety Communications (911 and dispatching) is the life blood of any public safety agency. Without it they cannot operate, at all. It is for this reason that public safety agencies take such a strong interest in how dispatching is done, by whom, with what inputs and controls. Dozens to hundreds of Counties (and combinations of cities) throughout the U.S. have set out to explore the concept of "Mutual Dispatch" or "PSAP Consolidation" assuming it was just another "low hanging fruit on the tree of potential savings" with which local government is assumed (by some) be replete. Well over half of those who set out to look into it have probably not implemented any form of consolidation. Some certainly should have, but it was too hard, too controversial or too complicated. Others should not have, and some have even undone it. Many are still in various stages of agreeing or disagreeing, or agreeing to disagree about it.

And still some have done it or are doing it in a stellar fashion.

Our long experience tells us that it is certainly possible to do this, in some fashion, with good results, provided there are people of good will, with good leaders and good (often outside) facilitation doing the hard work to make it happen.

[25] *See Page: 191*

General observations:

1. In our rather wide experience base in entities of a population and situation similar to those served by the Montgomery County Agencies, we were impressed with the implementation of a (County owned, Sheriff's Office operated) largely integrated 800 Megahertz (MHz), county-wide public safety trunked radio system that serves many of the law enforcement, fire and public works agencies in the County, as well as a Computer Aided Dispatch (CAD) system shared by a number of the fire andlaw enforcement agencies. These facts mean that the recently high-profile **communications inter-operability** elements so important to managing a coordinated response from numerous public safety agencies are well in hand in Montgomery County. In addition to this County owned system, the City of Dayton operates a very similar and compatible system which shares certain resources with the County system.

   In many of the Counties in the U.S.A. where we have conducted such studies, it is not at all unusual to find that the several police and Sheriff's Offices are on totally different and incompatible radio frequencies, such as some on VHF channels at 150 MHz, some on UHF channels at 450 MHz and some on 800 MHz radio channels. Furthermore, it is also most common to find that every agency operates their own CAD system with no interchange capabilities with their neighbors.

2. There is often inadequate staff on duty at some of the 14 Primary PSAPs to handle even a modest surge of 911 calls, not to mention the flood (in unpredictable surges) of such calls that are likely to arrive as wireless E911 services are implemented and expanded in the County.

3. The radio communications systems and ancillary equipment in place at the dispatch facilities range from nearing obsolescence, to relatively current. Also, there are some significant cost implications facing some of the smaller agencies in the County associated with bringing their radio systems in compliance with the Federal Communications Commission's (FCC) ***"narrow banding below 512 MHz"*** ruling, as follows:

   Specifically, the FCC has mandated a process widely known as "Narrow-banding below 512 MHz", which has a 2013 deadline for all radio transmitters licensed in the VHF (155 MHz) and UHF (450-460 MHz) bands to be configured to operate only on newly assigned FCC frequencies that are 12.5 KHz wide, as opposed to today's 25 KHz wide channels. Simply put, many of the UHF and VHF base stations in use by those agencies not on the two 800 MHz trunked systems (County and Dayton) will require replacement in order to accommodate narrow band channels, along with many or the mobile and portable radios. The same is likely the case for those base and end user radios owned by the several cities. This issue does not have a specific bearing on the question of the feasibility of consolidating any of the PSAPs. Simply put, these radios and their attendant FCC licenses will have to come into compliance regardless of how many dispatch centers there are and where they are.

4. The working conditions and staffing practices for 911 dispatchers in several of the PSAPs are sometimes below industry-accepted levels, and may be in violation of some elements of Ohio labor regulations (specifically relating to meal, rest and personal breaks away from the work space). ***Active*** supervision is too often not present. Some of the workspaces are cluttered, crowded and have inadequate current state of the art consideration of increasingly important ergonomic factors. On the other hand, some of the PSAPs are quite spacious, state-of-the art and functional.

5. The pending arrival of wireless 911 to the several PSAPs has the potential of a major impact on workloads.

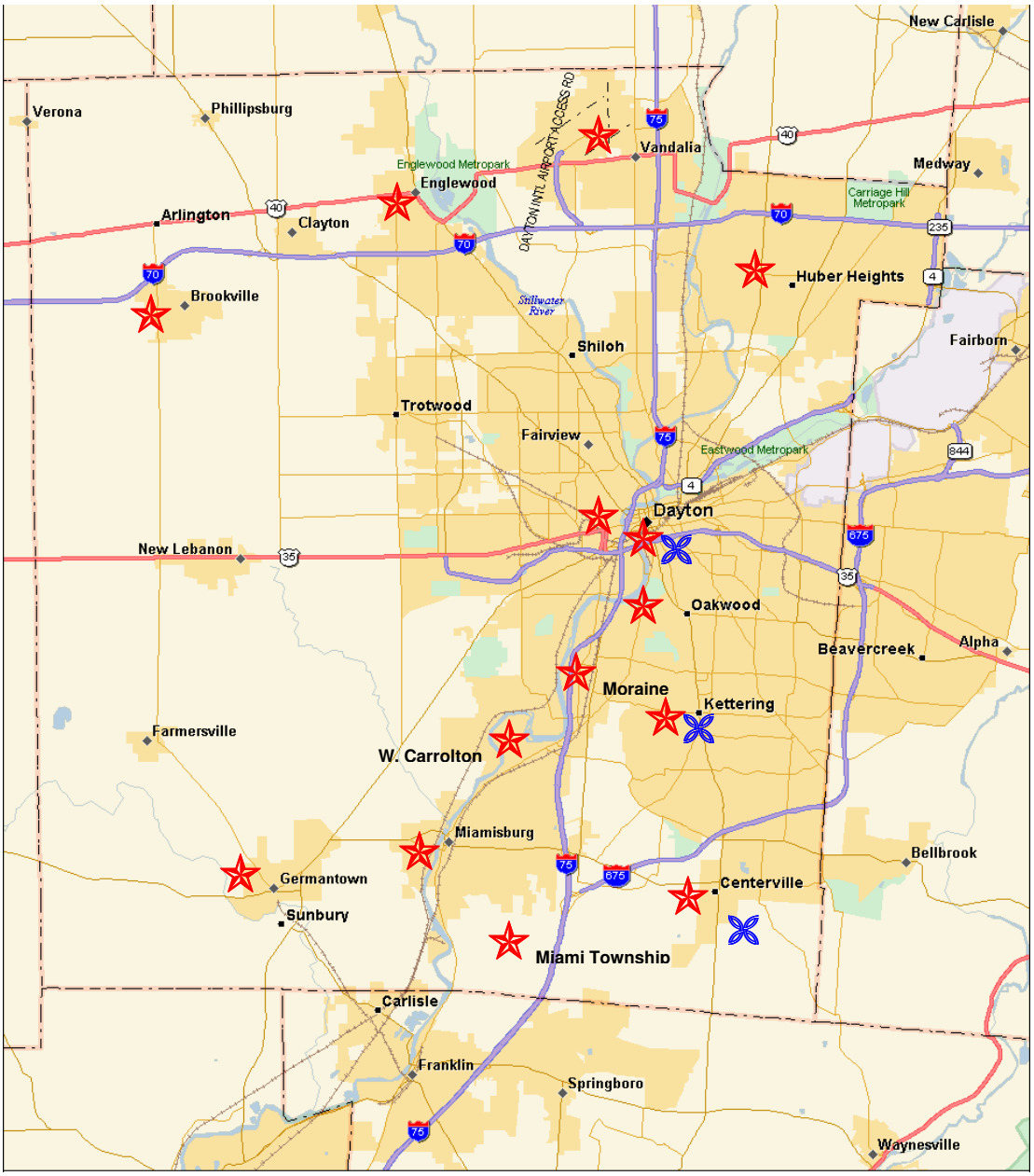
6. There is no strong inclination on the part of several of the "stand-alone" police agencies to shut down their primary PSAPs and merge into a consolidated PSAP*, particularly not one in which they perceive they might not have equitable control.*

Section III: Information on the current Montgomery County 911 Environment

The Enhanced 911 service environment in Montgomery County consists of two separate types of entities.

1. Those Agencies which answer 911 telephone calls. (The PSAP Operating Entities)

In Montgomery County area there are 17 such entities, 14 of which are "24 x 7 Primary PSAPs" (★) and three of which are 24/7 "Secondary" PSAPs. (✂)



The details of who operates which PSAPS for whom are as follows:

- 1. Dayton Police: Dayton PD is the initial answering point for all wired 911 calls dialed from within Dayton City limits. Their PSAP is located on the 2nd floor of the Signals building on Monument Avenue near Fire Station #4, the Dayton fire Department HQ. They are the only PSAP in the County operating in a true "Two Stage Dispatch" environment, with one group of civilian employees only answering 911 and 7 digit phone lines, and another group of sworn police officers doing radio dispatch of the Dayton P.D. units.

- 2. Dayton Fire: If the Dayton PD PSAP receives a fire/EMS call, it is transferred through the SBC/AT&T Enhanced 911 network (which means it leaves the building, goes some distance away and then re-enters the building) to the Dayton Fire Department secondary PSAP located on the 1st floor of the same building. Dayton Fire's PSAP also receives 911 calls transferred to it for the Riverside and Trotwood FDs, for which it provides fire dispatch services on a contract basis.

- 3. Montgomery County Sheriff: The Sheriff's PSAP is located in the basement of the jail building in downtown Dayton. Here they answer all wired 911 calls dialed from within those portions of the County where the Sheriff has primary law enforcement jurisdiction (no city or township police exists), as well as from within cities such as Trotwood, where a municipal police department exists, but they have contracted with the MCSO for 911 call answering and dispatching. The Sheriff's PSAP also initially answers all or nearly all wireless 911 calls dialed within the County today, pending the long-awaited implementation of wireless Enhanced 911 which will support far greater "selective routing" capabilities for wireless 911 calls. This PSAP is also starting to provide contract dispatch service to more fire and police agencies under a fee per dispatched event charge.

- 4. Kettering Police: Wired 911 calls dialed from within the Kettering city limits are initially answered in a PSAP located in the police HQ.

- 5. Kettering Fire: Fire and EMS calls from within Kettering are transferred here from the Kettering PD PSAP. It is located on the 2nd floor of a fire station a few blocks away from the Kettering City Hall and police facility.

- 6. Centerville Police: Wired 911 calls from within the Centerville city limits are answered in a spacious room in their new police facility. Fire calls are generally transferred to the Washington Township Fire Department secondary PSAP.

- 7. Moraine Police: Wired 911 calls from within Moraine's city limits are answered. Moraine police and fire are dispatched by this PSAP.

- 8. West Carrolton Police: Wired 911 calls are answered for this city, and the WCPD and WCFD are dispatched.

- 9. Miami Township Police: Wired 911 calls from within the township boundaries are answered and the Township police and fire departments are dispatched.

- 10. Miamisburg Police: Wired 911 calls from within the City of Miamisburg are answered here and the police and fire departments are dispatched.

- 11. Germantown Police: Wired 911 calls from within the City of Germantown are answered and the city police and fire are dispatched.

- 12. Brookville Police: Wired 911 calls from within the City of New Lebanon, Brookville and Perry Townships (under contract) are answered and their police and fire departments are dispatched.

- 13. Englewood PD: (Also known as NorthMont PSAP for North Montgomery County) Wired 911 calls from within Englewood are answered, along with calls for Union, and the police and fire departments are dispatched. *Until very recently, wired 911 calls from Clayton were also answered and dispatched here (under contract), but Clayton recently moved this contract to the Sheriff's Office PSAP.*

- 14. Huber Heights Police: Wired 911 calls from within this city are answered and dispatched to the police and fire departments.

- 15. Oakwood Public Safety: Wired 911 calls from within Oakwood are answered and dispatched to their public safety (police and fire) responders.

- 16. Vandalia Police: Wired 911 calls from within Vandalia are answered and dispatched to the Vandalia police and fire responders.

- 17. Washington Township Fire Department: 911 calls received in other Primary PSAPs (such as Centerville) are transferred here for processing and dispatch of the Township fire service.

    - This presents a classic example of how 911 call answering jurisdictional responsibilities can be confusing:

        - For that part of Washington Township Fire Department's jurisdiction that is the City of Centerville, the 911 calls are initially answered by the Centerville P.D. and then transferred to the Washington Township Fire PSAP for dispatch.

        - The balance of the Fire Department's service area is Washington Township, which receives its police service from the Sheriff's

Office on a contract basis, and that means that police calls for that portion of the fire department's service area are initially answered at the Sheriff's PSAP and then transferred to the Washington Township Fire Department PSAP for dispatch.

These Primary and Secondary PSAP Operating Entities either initially answer the 911 calls or receive them on a transferred basis, and then collect and record information from the callers, dispatch the appropriate responders via their two-way radio systems and equipment, and collect information regarding types of incidents, who was assigned to handle the event, track their response times and how they disposed of the events.

911 History in Ohio:

Under Ohio law, each County was authorized to develop the "911 system" they deemed appropriate for their county. This was to have been done via a 911 planning committee process involving the county's public safety agencies who then developed a plan, called the "Final Comprehensive Plan". Said plan was then to be approved by the County Commissioners, and then passed on to the PUCO. Once approved by the PUCO, the plan for said county could be implemented.

In the case of Montgomery County, this plan was developed and submitted in late 1987 (with significant assistance by *[then]* Ohio Bell Telephone Company). The statutorily required "County 911 Planning Committee" consisted of:

- A representative of the Township Trustees Assn. (Robert Smith of Butler)
- A representative of the Mayors/Managers Assn. (Richard Haas, Trotwood)
- A City Mayor (Gerald Busch, Kettering)
- A City Mayor (Richard Dixon, Dayton)
- A County Commissioner (Charles Curran, President)

In July of 1987, the Montgomery County Commission passed the resolution reproduced on the next page. It references the previous enactment of a special ½ of 1% temporary sales tax intended to raise funds for some general public safety purposes, a portion of which was then made available as the "*County's share*" of the one-time, non-recurring costs for implementing Enhanced 911 services in Montgomery County. ***IMPORTANTLY****,* at this time (1987) there was no technical opportunity to implement such "enhanced 911 services" for the then very immature cellular telephone technologies in the USA. Cellular service had only become marginally available (and at high cost and limited coverage) in late 1983.

On July 28th., 1987 the Board of Montgomery County Commissioners passed Resolution No. 87—1325 concerning the Montgomery County E-911 system. This resolution is as follows:

RESOLUTION SETTING ASIDE UP TO $500,000.00 OF THE FUNDS GENERATED BY THE TEMPORARY ADDITIONAL SALES TAX OF ONE-HALF PER CENT (.5%), SUPPORTED BY THE CITIZENS OF MONTGOMERY COUNTY FOR THE PURPOSE OF FINANCING THE EXPANSION AND RENOVATION OF THE MONTGOMERY COUNTY/CITY OF DAYTON LAW ENFORCEMENT AND JUSTICE FACILITIES, FOR USE AS UP TO FIFTY PER CENT (50%) LOCAL MATCH MONEY FOR THE MOST COST EFFECTIVE EQUIPMENT ALTERNATIVE BY EACH OF THE THIRTY-FOUR (34) JURISDICTIONS LISTED ON EXHIBIT "A" TO USE AS THEY ARE FACED WITH THE PURCHASE OF 911 EQUIPMENT.

WHEREAS, On August 13, 1985, the Board of County Commissioners, pursuant to Section 5739.021 of the Ohio Revised Code, levied a temporary additional sales and use tax at the rate of one-half per cent (.5%) to be used for the purpose of financing the expansion and renovation of the Montgomery County/City of Dayton Law Enforcement and Justice Facilities; and,

WHEREAS, This temporary sales and use tax was eliminated on October 1, 1986, because the projected revenue plus interest had reached $15.6 million, the cost of the project; and,

WHEREAS, Unanticipated bidding and construction delays have caused additional accumulation of interest revenues; and,

WHEREAS, The County-Wide 911 Task Force has been struggling for years to find the means to implement 911 Dispatch System and since 80% of all emergency calls are police related; and,

WHEREAS, The sales tax was supported by citizens county-wide and additional money has been generated; and,

WHEREAS, The resolution presented on July 21, 1987, proposing the setting aside of $500,000 of the funds generated by the temporary additional sales tax was not valid due to an incomplete vote.

NOW, THEREFORE, BE IT RESOLVED By the Board of County Commissioners of Montgomery County, Ohio, that up to $500,000 of the monies generated from the temporary additional sales and use tax levied for the purpose of financing the expansion and renovation of the Montgomery County/City of Dayton Law Enforcement and Justice Facilities be and is hereby set aside to be used for up to 50% local match money for the most cost effective equipment alternative by each of the thirty-four (34) jurisdictions listed on Exhibit "A" to use as they are faced with the purchase of 911 equipment.

(2)

The original Montgomery County 911 plan envisioned and implemented an E911 call answering environment significantly different than what exists today. ***This is important because it reminds us that E911 service provision configurations are – and arguably – should be dynamic and changing, based on the needs, the resources and the technical environment.*** Reproduced below (where shaded) is the section of the 1987 Country original 911 plan dealing with this service provision environment: Note that this plan calls for **18 PRIMARY PSAPS** (not counting the Highway Patrol) and **5 SEDONDARY PSAPS**, for a total of 23, compared to today's 14 PRIMARY and 3 SECONDARY PSAPS, a reduction of 22% in the number of primary PSAPs over the past 20 years, and 26% in total PSAPs over the same period.

SECTION III

E-911 TECHNICAL ADVISORY COMMITTEE RECOMMENDATIONS

Following meetings and technical demonstrations from the Ohio Bell Telephone Company as well as a number of Enhanced 911 equipment vendors showing the capabilities of the E-911, the 911 Technical Advisory Committee, on November 5, 1987, voted to recommend to the Planning Committee, the implementation of the Enhanced-911 (E—911) described as follows:

*Location and Number of **PRIMARY** Public Safety Answering Points*

Following a review of the current emergency telephone answering system as conducted by Ohio Bell Telephone), nineteen (19) primary (PSAP) regions (region map on page 11) are being recommended:

The City of Dayton Signal Building (Police Dispatch Center)
15 East Monument Street
Dayton, Ohio 45402

The Kettering Police Department
3600 Shroyer Road
Kettering, Ohio 45429

Huber Heights Police Department
7008 Brandt Pike
Huber Heights, Ohio 45424

Montgomery County Sheriff's Office
330 West Second Street
Dayton, Ohio 45422

Madison Township Police Department
4 Strader Drive
Trotwood, Ohio 45426

Centerville Police Department
100 West Spring Valley Road
Centerville, Ohio 45459

Miami Township Police Department
2660 Lyons Road
Miamisburg, Ohio 45342

Miamisburg Police Department
10 North First Street
Miamisburg, Ohio 45342

Vandalia Police Department
333 James Bohanan Blvd.
Vandalia, Ohio 45377

West Carrollton Police Department
300 East Central Avenue
West Carrollton, Ohio 45449

Randolph Township Police Department
6996 Taywood Road
Englewood, Ohio 45322

Englewood Police Department
333 West National Road
Englewood, Ohio 45322

Jefferson Township Police Department
601 Infirmary Road
Dayton, Ohio 45420

Oakwood Police Department
30 Park Avenue
Oakwood, Ohio 45419

Trotwood Police Department
35 North Olive Road
Trotwood, Ohio 45426

Moraine Police Department
4200 Dryden Road
Moraine, Ohio 45439

Germantown Police Department
75 North Walnut Street
Germantown, Ohio 45327

Brookville Police Department
Main & Mulberry Streets
Brookville, Ohio 45309

Ohio State Highway Patrol Post 57
5994 Poe Avenue
Dayton, Ohio 45414

Location and Number of ***SECONDARY*** *Public Safety Answering Points*

City of Dayton Signal Building (Fire Dispatch Center)
15 East Monument Avenue
Dayton, Ohio 45401

Kettering Fire Department
4121 Shroyer Road
Kettering, Ohio 45429

Harrison Township Fire Department
5190 Markey Road
Dayton, Ohio 45415

Mad River Township Fire Department
1791 Harshman Road
Dayton, Ohio 45424

Washington Township Fire Department
163 Maple Avenue
Centerville, Ohio 45459

All primary and secondary answering points are to serve as secondary answering points to each other, while primary PSAPs are to be able to communicate regionally with primary PSAPs in adjoining counties.

Telephone Companies Involved

—Ohio Bell Telephone (Later Ameritech, later SBC and now AT&T)
—General Telephone (Later and now Verizon Communications)
—Germantown Independent Telephone Co.

Enhanced 911 Network

Enhanced 911 service will be provided by a network of dedicated trunks connecting all local telephone central offices serving Montgomery County. Dedicated access lines will be provided from the E-911 telephone control office to every Public Safety Answering Point. A Data Management System will be used to create, store, and update the data required to provide enhanced features. Ohio Bell Telephone Company, with Information provided by legislative authorities of mun1cipalities~ townships, counties, and other appropriate sources, is responsible for establishment and maintenance of the software and date referred to as the 911 Data Base File.

All Enhanced 911 features would be available to Montgomery County communities through the telephone central office in conjunction with the Public Safety Answering Point serving each community. These enhanced features include Selective Routing, Automatic Number Identification, and Automatic Location Identification.

*The **Dayton Police** Communications Center will receive all 911 calls from those telephones located within the City of Dayton with the exception of those routed to the Ohio State Patrol. This PSAP will either dispatch the appropriate police unit(s) or transfer the call to the emergency service provider indicated.*

*The **Kettering Police** Dispatcher will receive all 911 calls from those telephones located within the City of Kettering. This PSAP will either dispatch the appropriate police unit(s) or transfer the call to the emergency service provider indicated.*

*The **Huber Heights Police** dispatcher will receive all 911 calls from those telephones located within the City of Huber Heights. This PSAP will either dispatch the appropriate police unit(s) or transfer the call to the emergency service provider indicated.*

*The **Montgomery County Sheriff's** Dispatcher will receive all 911 calls from those telephones located within the Sheriff's usual service area. This PSAP will either dispatch the appropriate police unit(s) or transfer the call to the emergency service provider indicated.*

*The **Madison Township Police** Dispatcher will receive all 911 calls from those telephones located within Madison Township with the exception of calls for police service within the City of Trotwood.*

*The **Centerville Police** Dispatcher will receive and dispatch 911 calls for police service from those telephones located within the City of Centerville.*

*The **Miami Township Police** dispatcher will receive all 911 calls from those telephones located within Miami Township. This PSAP will either dispatch the appropriate police unit(s) or transfer the caller to the emergency service provider indicated.*

*The **Miamisburg Police** dispatcher will receive all 911 calls from those telephones located within the City of Miamisburg. This PSAP will either dispatch the appropriate police unit(s) or transfer the call to the emergency service provider indicated.*

*The **Vandalia Police** dispatcher will receive all 911 calls from those telephones located within the City of Vandalia. This PSAP will then dispatch the appropriate police, fire, or EMS unit(s) as indicated.*

*The **West Carrollton Police** dispatcher will receive all 911 calls from those telephones located within the City of West Carrollton, This PSAP will then dispatch the appropriate police, fire, or EMS unit(s) as indicated.*

*The **Randolph Township Police** dispatcher will receive all 911 calls from those telephones located within the Township of Randolph with the Exception of calls for police service within the cities of Englewood and Union. This PSAP will then dispatch the appropriate police, fire, or EMS unit(s) as indicated.*

*The **Englewood Police** Dispatcher will receive all 911 calls from those telephones located within the City of Englewood. This PSAP will dispatch all calls for police service. Calls for Fire and EMS service within the City of Englewood will be forwarded by direct line to the Randolph Township PSAP.*

*The **Jefferson Township Police** dispatcher will receive all 911 calls from those telephones located within the Township of Jefferson.. This PSAP will then dispatch the appropriate police, fire, or EMS unit(s) as indicated.*

*The **Oakwood Police** dispatcher will receive all 911 calls from those telephones located within the City of Oakwood. This PSAP will then dispatch the appropriate police, fire, or EMS unit(s) as indicated.*

*The **Trotwood Police** dispatcher will receive all 911 calls from those telephones located within the City of Trotwood. This PSAP will then dispatch the appropriate police units and forward fire and EMS as indicated.*

*The **Moraine Police** dispatcher will receive all 911 calls from those telephones located within the City of Moraine. This PSAP will then dispatch the appropriate police, fire, or EMS unit(s) as indicated.*

*The **Germantown Police** dispatcher will receive all 911 calls from those telephones located within the Village of Germantown, German Township, Jackson Township, and Farmersville. This PSAP will then dispatch the appropriate police, fire, and EMS unit(s) as indicated. Calls for Fire and EMS In Jackson Township and Farmersville will be forwarded to the Brookville Police Department PSAP for resolution.*

*The **Brookville Police** dispatcher will receive all 911 calls from those telephones located within the City of Brookville, Village of Phillipsburg, and Townships of Clay and Perry. This PSAP will then dispatch the appropriate police, fire, or EMS unit(s) as indicated. Additionally, calls for Fire and EMS service in New Lebanon, Farmersville, Jackson Township, and Verona will be received from the appropriate PSAP's for resolution.*

*The **Ohio State Highway Patrol Post 57** will receive all E911 calls which are routed through the Dayton-Montgomery County area Cellular Telephone Network. These calls will either be handled by the Ohio State Highway Patrol or they will be routed by speed-dialer to the appropriate agency.*

The Ohio State Highway Patrol will also receive all E-911 calls from the Dayton Correctional Institution at 4101 Germantown Street in Dayton, the Dayton Mental Health Center at 2611 Wayne Avenue in Dayton, and the Montgomery Developmental Center at 7650 Timbercrest Drive in Huber Heights. -

Operation and Maintenance of Each PRIMARY PSAP

The Montgomery County Commission, in conjunction with the Montgomery County Sheriff's Office, will establish, equip, furnish, operate and maintain the Montgomery County Primary Public Safety Answering Point.

The Cities of Dayton, Kettering, Huber Heights, Centerville, Miamisburg, Vandalia, West Carrollton, Englewood, Oakwood, Trotwood, Moraine, Germantown and Brookville, in conjunction with their respective Police and Fire Departments or Divisions , will establish, equip, furnish, operate and maintain their own Primary Public Safety Answering Points.

The townships of Madison, Miami, Randolph, and Jefferson, in conjunction with their respective Police and Fire Divisions, will establish, equip, furnish, operate and maintain their Primary Public Safety Answering Points.

The Ohio State Highway Patrol, in conjunction with the State of Ohio, will establish, equip, furnish, operate and maintain their Primary Public Safety Answering Point.

Operation and Maintenance of Each SECONDARY PSAP

*The City of **Dayton**, in conjunction with it's **Fire Department**, will establish, equip, furnish, operate, and maintain a Secondary Public Safety Answering Point.*

*The City of **Kettering**, in conjunction with it's **Fire Division**, will establish, equip, furnish, operate, and maintain a Secondary Public Safety Answering Point.*

*The **Township of Harrison**, In conjunction with it's **Fire Division**, will establish, equip, furnish, operate, and maintain a Secondary Public Safety Answering Point.*

*The **Township of Mad River**, in conjunction with it's **Fire Division**, will establish, equip, furnish, operate, and maintain a Secondary Public Safety Answering Point.*

*The **Township of Washington**, in conjunction with it's **Fire Division**, will establish, equip, furnish, operate, and maintain a Secondary Public Safety Answering Point.*

Under the provisions of Ohio law, the recurring costs for wire line enhanced 911 (which was and still is, largely, a recurring telephone service) were due and payable to the primary telephone service provider in an area, the one from which such E911 services were ordered. In the case of Montgomery County, that would have been Ohio Bell, and the law permitted Ohio Bell (and via extension, other local telephone companies who would be submitting 911 dialed calls to the Ohio Bell E911 network) to levy a **surcharge** for these E911 services on the phone bills of all phone network subscribers. This surcharge was set at 12¢ per line per month for Ohio Bell customers, 15¢ per line per month for GTE

(Verizon) customers and an unknown amount for customers of the Germantown Independent Telephone Company.

The formula for determining these costs and who was going to pay for them was also set forth in the 1987 plan, as follows (items in shading):

Cost Formula

Telephone Company Costs

The three telephone companies (Ohio Bell Telephone, General Telephone, and the Germantown Independent Telephone Co.) will be responsible for the non-recurring telephone network costs necessary to establish the central 911 system. These telephone companies will then receive a public utility excise tax credit for these costs.

Telephone User Costs

Telephone customers receiving the 911 service will pay for the recurring costs (maintenance costs) associated with the telephone network and selective routing system. These charges will be included in the residential and business customers telephone bill. The amount of the charge will be 12 cents per line per month for the residential user on the Ohio Bell Telephone portion of the system, 15 cents for customers of General Telephone and (_____) for customers of the Germantown Independent Telephone Company. Costs will be slightly different for the business customers according to PUCO regulations. The PUCO will review each telephone company's rate (maintenance cost) on an annual basis and any changes will be determined by normal PUCO rate making procedures.

Local Political Subdivision Costs

Local governmental entities will pay for the initial purchase and installation of the PSAP with the Board of Montgomery County Commissioners providing up to 50 percent (per resolution No. 87—1325) local match money for the most cost effective equipment alternative by each of the thirty-four jurisdictions listed on exhibit "A" (Page No. 3 of this document).

The recurring costs of the E-911 system will be funded at the local jurisdiction's expense.

The costs listed in the following tables are quotes from various vendors for Enhanced-911 equipment. Each PSAP will be bid as part of a county-wide master bid, with bid award being made by each local jurisdiction. This bidding process should allow for compatibility of equipment county wide.

Political jurisdictions, including the Board of Montgomery County Commissioners, will not incur a financial liability until the E-911 System has been installed and operational for a period of thirty (30) days to the satisfaction of all user PSAP regions.

DAYTON - MONTGOMERY COUNTY E-911 PSAPS

PSAP & USER	TRUNKS	POS'S	EQP	EQUIP + INSTALL COST	AGENCY SHARE	RECURRIN COST (monthly
1 Dayton Police Department	12	12	P	$84,900.70	$42,450.35	$607.27
Dayton Fire Department				$10,000.00	$5,000.00	
Population Served: 190993				Total	$47,450.35	
2 Kettering Police Department	2	2	A	$29,670.00	$14,835.00	$296.00
a. Kettering Fire Department				$29,670.00	$14,835.00	
Population Served: 61186				Total	$29,670.00	
3 Huber Heights Police Department	2	2	A	$29,670.00	$14,835.00	$296.00
Huber Heights Fire Department						
Population Served: 35480				Total	$14,835.00	
4 Montgomery County Sheriff	6	6	P	$58,740.70	$29,370.35	$444.95
a. Harrison Twp. Fire Dept.				$21,940.00	$10,970.00	$230.00
Mad River Twp. Police Dept.						
b. Mad River Twp. Fire Dept				$21,940.00	$10,970.00	$230.00
c. Washington Twp. Fire Dept.				$21,940.00	$10,970.00	$230.00
Butler Twp. Police Dept.						
Union Police Dept.						
New Lebanon Police Dept.						
Riverside Police Dept.						
Population Served: 99647						
5 Madison Twp. Police Dept.	2	1	A	$21,940.00	$10,970.00	$230.00
Madison Twp. Fire Dept.						
Population Served: 22784						
6 Centerville Police Dept.	2	1	A	$21,940.00	$10,970.00	$230.00
Population Served: 18886						
7 Miami Twp. Police Dept.	2	1	A	$21,940.00	$10,970.00	$230.00
Miami Twp. Fire Dept.						
Population Served: 18076						
8 Miamisburg Police Dept.	2	1	A	$21,940.00	$10,970.00	$230.00
Miamisburg Fire Dept.						
Population Served: 15304						
9 Vandalia Police Dept.	2	1	A	$21,940.00	$10,970.00	$230.00
Vandalia Fire Dept.						
Popluation Served: 13161						

PSAP & USER	TRUNKS	POS'S	EQP	EQUIP + INSTALL COST	AGENCY SHARE	RECURRIN COST (monthly
10 West Carrollton Police Dept West Carrollton Fire Dept. Population Served: 13148	2	1	A	$21,940.00	$10,970.00	$230.00
11 Randolph Twp. Police Dept. Randolph Twp. Fire Dept. Butler Twp. Fire Dept. Clayton Police Dept. Population Served: 38596	2	1	A	$21,940.00	$10,970.00	$230.00
12 Englewood Police Dept. Population Served: 11329	2	1	A	$21,940.00	$10,970.00	$230.00
13 Jefferson Twp. Police Dept. Jefferson Twp. Fire Dept. Population Served: 9379	2	1	A	$21,940.00	$10,970.00	$230.00
14 Oakwood Police, Fire & EMS Population Served: 9372	2	1	A	$21,940.00	$10,970.00	$230.00
15 Trotwood Police Dept. Population Served: 7802	2	1	A	$21,940.00	$10,970.00	$230.00
16 Moraine Police Dept. Moraine Fire Dept. Population Served: 5325	2	1	A	$21,940.00	$10,970.00	$230.00
17 Germantown Police Dept. Germantown Fire Dept. German Twp. Police Dept. German Twp. Fire Dept. Jackson Twp. Police Dept. Farmersville Police Dept. Population Served: 11507	2	1	A	$21,940.00	$10,970.00	$230.00
18 Brookville Police Dept. Clay Twp. Police Dept. Perry Twp. Police Dept. Phillipsburg Police Dept. Brookville Fire Dept. Clay Twp. Fire Dept. Perry Twp. Fire Dept. Phillipsburg Fire Dept. New Lebanon Fire Dept. Farmersville Fire Dept. Verona Fire Dept. Jackson Twp. Fire Dept. Population Served: 19889	2	1	A	$21,940.00	$10,970.00	$230.00
19 State Highway Patrol Cellular Telephone State Agencies	2	1	A	$21,940.00	$10,970.00	$230.00
				$637,571.40	$318,785.70	
Montgomery County Commission Share:					$318,785.70	

THE METHOD OF ALLOCATING THE COSTS OF THE ABOVE IS AS FOLLOWS:

The City of Dayton will assume all costs exceeding fifty percent (50%) of the cost of the installation of the most effective equipment alternative and one hundred percent (100%) of the monthly cost for the Dayton PSAP's.

The City of Kettering will assume all costs exceeding fifty percent (50%) of the cost of the installation of the most effective equipment alternative and one hundred percent (100%) of the monthly cost for the City of Kettering PSAP's.

The City of Huber Heights will assume all costs exceeding fifty percent (50%) of the cost of the installation of the most effective equipment alternative and one hundred percent (100%) of the monthly cost for the City of Huber Heights PSAP.

The County of Montgomery will assume all costs exceeding fifty percent (50%) of the cost of the installation of the most effective equipment alternative and one hundred percent (100%) of the monthly cost for the Montgomery County Sheriff's PSAP.

The Township of Madison will assume all costs exceeding fifty percent (50%) of the cost of the installation of the most effective equipment alternative and one hundred percent (100%) of the monthly cost for the Madison Township PSAP.

The City of Centerville will assume all costs exceeding fifty percent (50%) of the cost of the installation of the most effective equipment alternative and one hundred percent (100%) of the monthly cost for the Centerville Police Department PSAP.

The Township of Miami will assume all costs exceeding fifty percent (50%) of the cost of the installation of the most effective equipment alternative and one hundred percent (100%) of the monthly cost for the Miami Township PSAP.

The City of Miamisburg will assume all costs exceeding fifty percent (50%) $_0$f the cost of the installation of the most effective equipment alternative and one hundred percent of the monthly cost for the City of Miamisburg PSAP.

The City of Vandalia will assume all costs exceeding fifty percent (50%) of the cost of the installation of the most effective equipment alternative and one hundred percent (100%) of the monthly cost for the Vandalia PSAP.

The City of West Carrollton will assume all costs exceeding fifty percent (50%) of the cost of the installation of the most effective equipment alternative and one hundred percent (100%) of the monthly cost for the West Carrollton PSAP.

The Township of Randolph will assume all costs exceeding fifty percent (50%) of the cost of the installation of the most effective equipment alternative and one hundred percent (100%) of the monthly cost for the Randolph Township PSAP.

The City of Englewood will assume all costs exceeding fifty percent (50%) of the cost of the installation of the most effective equipment alternative and one hundred percent (100%) of the monthly cost for the Englewood PSAP.

The Township of Jefferson will assume all costs exceeding fifty percent (50%) of the cost of the installation of the most effective equipment alternative and one hundred percent (100%) of the monthly cost for the Jefferson Township PSAP.

The City of Oakwood will assume all costs exceeding fifty percent (50%) of the cost of the installation of the most effective equipment alternative and one hundred percent (100%) of the monthly cost for the Oakwood PSAPI

The City of Trotwood will assume all costs exceeding fifty percent (50%) of the cost of the installation of the most effective equipment alternative and one hundred percent (100%) of the monthly cost for the Trotwood PSAP.

The City of Moraine will assume all costs exceeding fifty percent (50%) of the cost of the installation of the most effective equipment alternative and one hundred percent (100%) of the monthly cost for the Moraine PSAP.

The City of Germantown will assume all costs exceeding fifty percent (50%) of the cost of the installation of the most effective equipment alternative and one hundred percent (100%) of the monthly cost for the Germantown PSAP. -

The City of Brookville will assume all costs exceeding fifty percent (50%) of the cost of the installation of the most effective equipment alternative and one hundred percent (100%) of the monthly cost for the Brookville PSAP.

The State of Ohio will assume all costs exceeding fifty percent (50%) of the cost of the installation of the most cost effective equipment alternative and one hundred percent (100%) of the monthly cost for the State Highway Patrol Post 57 PSAP.

Agencies who operate a Primary PSAP and who provide a dispatch service for another/other agency/agencies, will be responsible for negotiating a fee for service (if any) with that/those agency/agencies.

The Board of Montgomery County Commissioners will assume fifty (50) percent of the Installation costs for the most cost effective equipment alternative for each of the Primary and Secondary PSAP entities named above.

On a national basis, the whole area of 911 surcharges changes almost annually, with many states amending their laws to recognize the need to collect surcharges from cell phones (as Ohio did recently, as one of the last in the U.S. to do so).

The major factor that distinguishes the Ohio 911 surcharge is the fact that **the county gets none of the surcharge revenue.** All of the 12¢ or 15¢ collected per month by the Montgomery County phone companies is kept by the phone companies to (at least theoretically) cover their costs for providing the E911 network and database services. And, while this means that the jurisdictions that operate E911 systems do not have to pay monthly bills for 911 telephone services, it also means they get no revenue to help defray the costs of providing equipment, facilities, radio systems, dispatchers and all the related equipment and staff necessary to provide this important service.

The table below depicts the general status of wired and wireless 911 **monthly** surcharges in the U.S., but it can be misleading. In many states, the State sets the maximum that can be collected (especially for wired), but the counties have to act. Many have not enacted up to that maximum. (Data current as of April, 2006)

State	Wireline	Wireless
Alabama	5% of Base Rate	$0.70
Alaska	$0.50 - $2.00	$0.50 - $2.00
Arizona	$0.37	$0.37
Arkansas	5% of Basic Rate	$0.50
California	.65% of intrastate calls	.65% of intrastate calls
Colorado	$0.40 - $1.25 (max)	$0.40 - $1.25 (max)
Connecticut	$0.37	$0.37
Delaware	$0.50	$0.60
District of Columbia	$0.60 - $3.00	$0.60
Florida	$0.34 – 0.50	$0.50
Georgia	$1.50	$1.00
Hawaii	$0.27	$0.66
Idaho	$1.00 (max)	$1.00 (max)
Illinois	$0.29 - $5.00	$0.75 $1.25 City of Chicago
Indiana	3% or 10% of Monthly Access	$0.50
Iowa	$0.25 - $1.00	$0.65
Kansas	$0.75 (max)	$0.50
Kentucky	$0.36 - $4.00	$0.70
Louisiana	$1.00 Res $2.00 Bus (max)	$0.85 (max)
Maine	$0.50	$0.50
Maryland	$1.00 (max)	$1.00 (max)
Massachusetts	$0.85	$0.30
Michigan	$0.19 - $4.00	$0.29
Minnesota	$0.65	$0.65
Mississippi	$1.00 Res $2.00 Commercial (25 Lines)	$1.00
Missouri	15% of Base Rate	None
Montana	$0.50	$0.50
Nebraska	$0.25 - $1.00	$0.50
Nevada	Varies – Some Property Tax Some Surcharge – $1.00 (max)	County by County City by City - $1.00 (max)
New Hampshire	$0.42	$0.42
New Jersey	$0.90	$0.90
New Mexico	$0.51	$0.51
New York	$0.35	$1.20 - $1.50
North Carolina	$0.25 - $2.00	$0.80
North Dakota	$1.00	$1.00
Ohio	$0.50 (max) (limited to a few Counties, no general surcharge)	$0.32
Oklahoma	3-15% of monthly recurring charges	$0.50 (Approx. 4 Counties)
Oregon	$0.75	$0.75
Pennsylvania	$0.74 - $1.50	$1.00
Rhode Island	$1.00	$1.26
South Carolina	Based on access lines	$0.60
South Dakota	$0.75	$0.75
Tennessee	$0.65 - $2.00 / $1.50 - $3 special	$1.00
Texas	$0.50 Less than 1% on intrastate calls	$0.50 Less than 1% on intrastate calls
Utah	$0.65	$0.65
Vermont	Universal Service Funding	Universal Service Funding
Virginia	$3.00 (max)	$0.75
Washington	$0.20 Statewide $0.50 by Counties	$0.70
West Virginia	$0.55 - $3.75 by County	$3.00
Wisconsin	$0.40 - $1.00	$0.83
Wyoming	$0.50 – 0.75	$0.50 – 0.75

This Ohio wired 911 surcharge situation is almost unique in the U.S. We're aware of Wisconsin where the phone companies also keep all of the wired 911 surcharge revenues.

In some other states very significant funding is available to the local 911 system operators to defray the expenses of a broad sweep of expenses. Some examples:

- Chicago, IL: $1.25 per line per month, all direct to the City.
- Franklin Co., MO: 11% on basic phone bill (abt. $15.00 = $1.65/mo) all to County. Amounts to $700,000 per year in a county of 95,000)
- St. Clair Co., IL: 65¢ per wired line/mo. (165,000) = $1.3 million/yr, all to County.
- Johnson Co, IA: $1.00 per line per month, all to County.

The point here is that while 911 entities in the above examples (and most others) have to pay the monthly bills for 911 services to the phone companies, they collect a lot more money than those bills require. This enables them to build up cash balances to purchase new E911 equipment periodically, pay for training, pay to implement 911 call mapping, 911 wireless call mapping and (in some cases), pay for part or all of the one time and recurring costs for building or staffing 911 centers.

This issue of lack of adequate funding (or a funding mechanism) will come up several times throughout this report.

A huge issue facing 911 services in Ohio in general, and in Montgomery County in particular is the move to implement wireless Enhanced 911 services and systems. It is an unfortunate fact that Ohio is (except for Missouri) the slowest state in the U.S. to create an environment in which wireless enhanced 911 systems are able to be implemented.

This wireless 911 technology may well bring more changes to 911 PSAP operations than any other technology to date.

Specifically, calls from cell phones have been dialed to 911 and answered by *somebody* in most places in the USA for a number of years now. In Ohio, that "somebody" was determined by the County's 911 plan and later modified procedures to be the Highway Patrol and later (to a large degree) the County Sheriff's PSAP.

In 1996, the FCC (*The only entity that can effectively regulate wireless carriers. The states, through bodies like the State Utilities Commission have no real authority over them*) promulgated a set of regulations to the wireless carriers which required them to ***create the capability to*** (a very important distinction) receive and transmit wireless E911 calls in a fashion more appropriate for the Enhanced 911 networks and PSAPs of the USA. These regulations had a "Phase 1" and a "Phase 2" set of requirements.

Many city and County PSAPs in the USA have been hard at work devising their methods and procedures for receiving these calls and (at least) Phase 1 wireless E911 calls are now being effectively received at the vast, vast majority of city and county PSAPs throughout the USA, except in Ohio and a few other states. And many Counties (hundreds) are doing Phase 2 calls as well.

Perhaps the most challenging aspect of wireless E911 calls relates to the number and irregularity of the volume of wireless E911 calls, as well as the added time necessary to process a 911 call that does not contain a good address from E911 Automatic Location Information (ALI) data.

In 1998, most local (city and county) PSAPs estimated that fully 20% of all of their 911 calls received were wireless 911 calls. Industry statistics and projections indicate that the number of wireless users and the number of their calls to 911 is increasing at nearly 25% per year. It seemed to be a reasonable projection that by 2007, fully ***60 - 70% of all 911 calls would be from wireless phones***. In St. Clair County, IL, where they have been receiving both Phase 1 and Phase 2 wireless 911 calls longer than any other PSAP in the USA, they have data that indicate that fully 58% of all 911 calls answered at their PSAP originate from cell phones today. (Metro St. Louis.) In Oakland County, MI where their PSAP serves about 300,000 residents, **fully 78% of their total 911 call volume in 2004 was wireless 911 calls.**

In and of itself, all of this could be problematic. However it only scratches the surface of the potential problem. More specifically, not only do and will more people have these phones, and will these more people place more 911 calls, but because of more people having these phones and these people being "out and about" in a position to observe more "911 reportable incidents", there will be a significant increase in the number of 911 calls being placed to report any single visible incident.

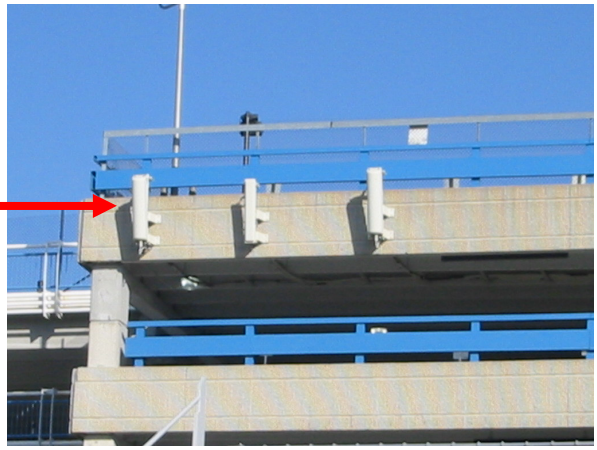
For example, 25 years ago (before cellular 911 at all), if there was a car-truck accident on Ohio Rte. 202 at its intersection with U.S. 40 in Vandalia, it would be likely that some dispatch center might receive one or two phone calls from folks who took the time, had the interest, had the correct change (since they may not have known a 911 call from a pay phone is free) and found a pay phone to dial "0" (or even 911) to report said accident. Today, it is a reasonable assumption that within the 1st three minutes of such accident, not less than 20 calls would be dialed to 911 from wireless phones in the cars of passers-by or those involved in the accident.

Not only is this more calls than are "needed" for the PSAP to know that there has been an accident at that location and to start the appropriate responders to the scene, but it is more calls than any PSAP staffed with only one or two operators can possibly hope to answer, while ***at the same time those operators are trying to dispatch the responders to this emergency and handle other normal traffic.***

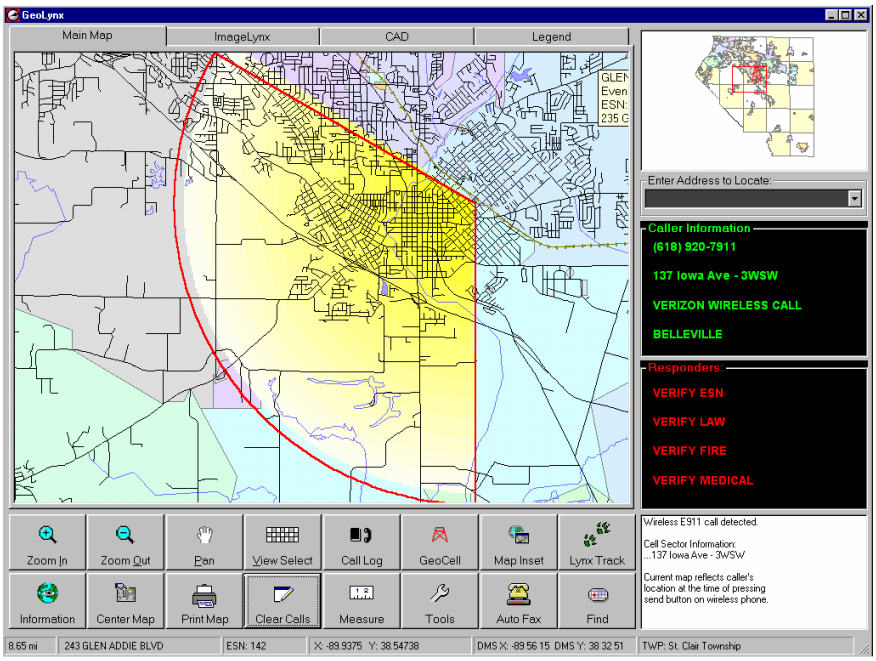
There is a corollary issue as well relating to E911 selective routing and how wireless 911 calls work with selective routing. Specifically, Phase 1 wireless 911 calls are routed today (and will be for the foreseeable future) based on the cell tower or panel of antennas at a tower that create a "sector" of coverage from that tower. Typically, *(but not always, as is obvious from the right side picture below)* these sectors are approximately 120° "*pie slices*" of a 360° circle of coverage from that tower.

LEFT: A typical "sector" of a 3 sector site on a tower.

RIGHT: One "sector" (3 antenna panels) of an unknown number of sectors on a parking ramp at an airport.



The 911 call routing pre-determination for a given sector of a given tower is (or should have been) based on an analysis of the radio signal coverage "footprint" provided by that tower or sector's antennas. In many cases the coverage size of one of these footprints can be several miles across. As such, within that several mile distance, there might be three or more 911 PSAP jurisdiction boundaries. If all three PSAPs lay claim to some of the land within that "footprint", and the wireless 911 call can only be ***initially routed*** to one of these PSAPs, then it is reasonable to assume that some portion of the time the wireless 911 calls will end up at the "wrong PSAP". This may mean that a fairly small PSAP might end up getting more calls than it wants (or needs) due to the vagaries of the coverage of a given cell tower or sector, or the behavior of radio signals, or the fact that the caller may have been in the Montgomery County 911 area by the time they found their cell phone in their purse and then pressed [SEND], but they are reporting an incident that clearly occurred in the OHP responsibility area, or vice-versa. The following illustration depicts how Phase 1 cell sector coverage can be depicted upon call answering.



This scenario points to a theme that will be throughout this report. Specifically, that the paradigms for the staffing of a 911 PSAP are changing radically.

As we have pursued our research on this project, we learned that with the recent changes to Ohio law that finally permit the collection of 911 surcharges on wireless phones, there is a requirement that the County convene a planning process to specifically address a revision to the earlier referenced "911 final plan". Under this process, a special committee is required to develop plans for which PSAPs will get wireless 911 calls in which circumstances, and how 911 surcharge proceeds collected by the state and then distributed to the counties will be disbursed in Montgomery County. It is expected that this will amount to nearly $1.1 million per year.

This wireless 911 planning process needs to be transparent, technically astute and aware of a number of the intricacies and nuances of wireless 911 call processing and routing. It also needs effective participation from all of the 911 entities in the County so that (literally) each and every wireless carrier's *(there can be up to seven such carriers in a given county)* towers and antenna arrays can be analyzed for their coverage, and decisions made on where 911 calls are to be routed

for every antenna "sector". In a county the size and population of Montgomery County, we would expect this to involve literally hundreds of discrete decisions.

The decision matrix goes like this:

1. For wireless 911 calls processed through "Coverage Sector 1" on Tower 1 from Carrier 1, which PSAP should they be initially routed to?

    a. This involves more than looking at a map and seeing which 911 jurisdiction "owns the most land" in the cellular radio signal coverage sector of a given tower. It also requires that persons aware of what the land use is in that coverage area make decisions that may reflect that particular land use, while 80% of the land covered by a given sector is in City A, the 20% that is in City B contains a major shopping mall, a high generator of wireless call activity, thereby leading to the conclusion that calls through this sector should "defy geographic logic" and be routed to PSAP B and not PSAP A.

    b. Clearly, before these decisions can be made it needs to be known where the PSAPs will be, how many there will be, and what their capability to handle the unique data display and mapping requirements for Phase 2 calls will be.

2. And this then gets repeated time and time again for every tower, every set of antennas and every carrier.

3. And, it can change over time as antenna orientations are shifted, power levels for transmitters and raised or lowered and carriers merge, go out of business or buy each other out.

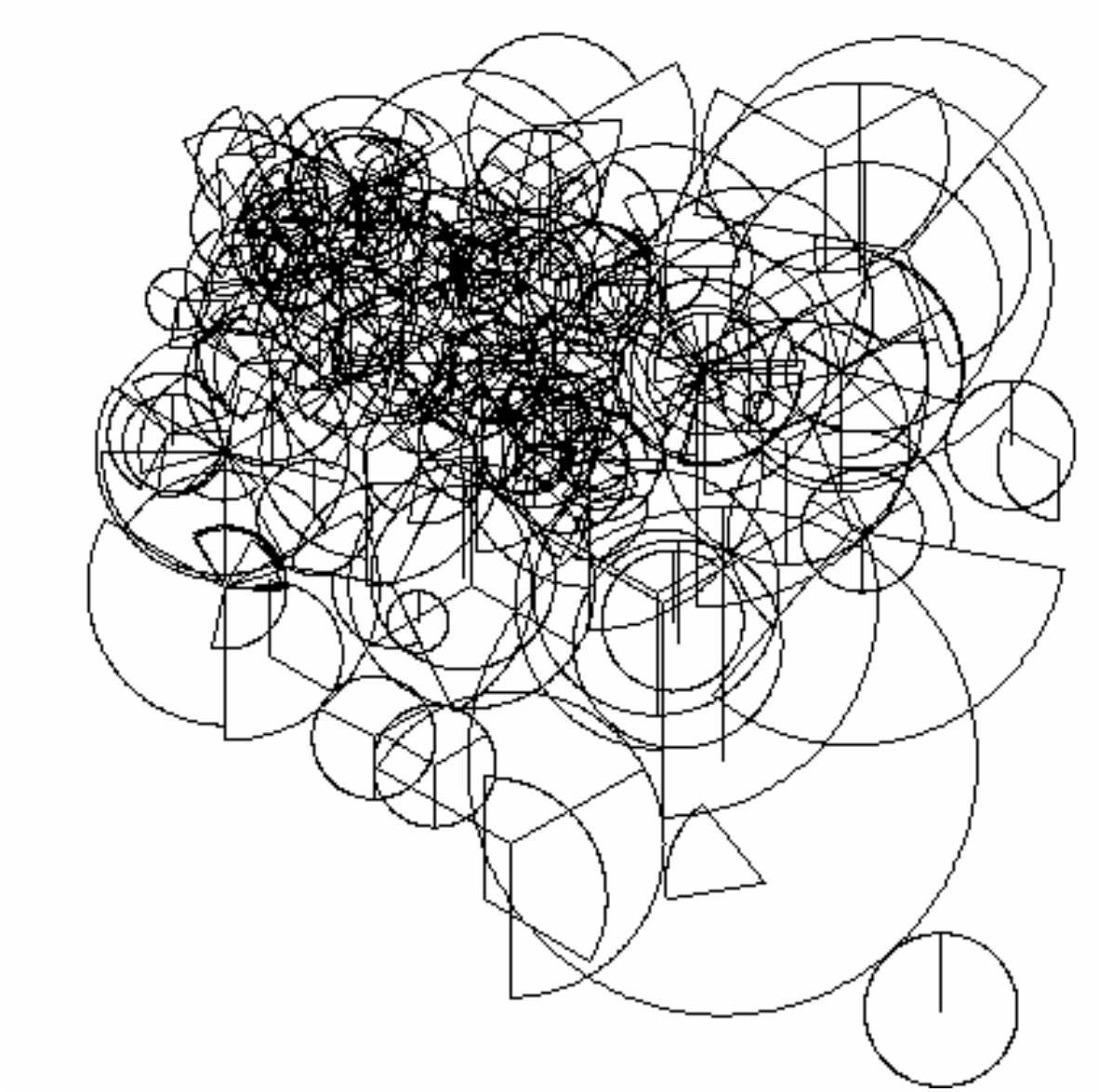
We are advised by Amy Wiedeman of Montgomery County Administration (who is convening this process) that this planning process is being held in abeyance pending the outcome of this study.

Importantly, as it stands right now, there is no Phase 1 or Phase 2 available in the County. Because of this, all wireless 911 calls are routed in a "Phase 0" or a "Phase .5" process (merely forwarded to 7-digit lines or the Sheriff's 911 trunk lines as an "UNKNOWN CALL" The several wireless carriers are all capable and ready to deploy Phase 1 and/or Phase 2, upon valid requests from "the customer", which, in Ohio, will be the County, once the County's plan is developed, submitted to the PUCO and approved. Since these orders have not yet been placed, it is not possible for any of the not yet being processed Phase 1 or Phase 2 calls to be "selectively routed" to any of the local PSAPs in Montgomery County.

IMPORTANT: Even though "Phase 2" wireless E911 calls will contain the latitude and longitude of the caller when the caller pressed SEND on their phone, that data is not usually sent with the INITIAL CALL'S ALI data to the answering PSAP. In other words, the initial answering PSAP will get the Automatic Number ID (ANI) for the wireless call (which is NOT the caller's call back number), followed by the AUTOMATIC LOCATION INFORMATION (ALI) screen appropriate for that call, which will contain the caller's call back number as well as data on the wireless service provider, the cell tower location and the servicing cell sector for this call. ***IT WILL NOT CONTAIN ACCURATE LAT/LONG INFO YET.*** This lat/long data takes a few seconds to be determined and is usually not available with this initial ALI. The dispatcher must usually do an ALI Re-bid to get the correct lat/long data. For this reason, Phase 2 calls generally can't be routed on the basis of the

caller's location, and will still be routed on the basis of the cell site and sector of origination of the call.

In conclusion, and to put this all in perspective, we are inserting below a depiction of the general coverage areas for every cell tower and sector of one of the counties where we were heavily involved in Phase 1 and Phase 2 wireless E911. Every one of the full circles below represents an "omni-directional" tower, and every one or pair of the 120° "pie slices" represents the coverage pattern within this County for a separate cell tower. Where they get dark and thick is in the urban area for this County of 270,000 people immediately adjacent to St. Louis. Every one of these sectors required a separate routing decision for the 9 PSAPs in this County.



The State of Public Safety Communications in Montgomery County.

The following section will provide narrative details with commentary on the radio equipment, facilities, staffing, procedures, activity levels, expansion and/or consolidation plans, and communications expenditure data for the above PSAPs.

In general, it has been our observation that most of the PSAPs (dispatch centers) are relatively orderly, well equipped and served by decent core equipment and services through the good work of the individual agencies and their service shops.

An important element in any discussion of radio communications capabilities is that of **communications interoperability.** Simply put, this term refers to the electronic ability of one local government/public safety radio to talk to another local government/public safety radio during some event requiring coordination of communications. For example, standing all by itself, an 800 MHz radio used by a Montgomery County Sheriff's deputy cannot talk to a VHF (150 MHz) radio in use in the Germantown Police Department.

There are fixes to this problem, but they cannot fix the problem completely. Devices or systems such as "console patches" or "gateway switches" can be employed either in dispatch centers or in the field, but they often mean that each of the incompatible radios must be able to reach their home system before their transmission can be connected to that of the "foreign radio" via one of these devices.

Simply put the very best way to achieve the maximum in interoperability is for all the radios in question to share (at a minimum) a common frequency band (such as 800 MHz or 450 MHz UHF, for example) and some common radio channels (or talk groups on trunked radio systems) within that band.

The public safety two way radio environment in Montgomery County is far more interoperable than many we have seen in the U.S.A. The County has invested in a very competent and robust 800 MHz simulcast trunked radio system, and many of the public safety and public works type agencies in the County have subscribed to this system. **IMPORTANTLY, such subscription to a countywide radio system does not necessarily mean merged PSAP operations.** Furthermore, the County radio shop, working with the City of Dayton (which has a very similar 800 MHz trunked radio system) has developed a number of shared capabilities between the two systems for interoperability purposes. Additionally the County radio shop has implemented an important countywide PSAP to PSAP radio capability using the 800 MHZ trunked radio system, with a talk group on the system called "I-PSAP".

Finally, a comprehensive communications interoperability planning process was recently completed and there are plans and concepts on how to improve this field even more in the County. These (and other) actions have rendered the "radio side of PSAP consolidation" to be largely a moot point in Montgomery County. In many counties the question of ***"how would we talk on the radio to all those agencies?"*** can be a real show-stopper. It should not be in Montgomery County.

The Enhanced 911 telephone network and PSAP 911 equipment varies greatly, running the gamut from relatively new to near obsolescence, with the eventual required exception of the addition of GIS based mapping and internal upgrades to accept the wireless E911 data that will accompany these calls, when they come.

An additional future issue will be the degree to which the PSAP based 911 equipment will be able to accept "911" communications generated and transmitted over the Internet. Many readers may, by now, be familiar with the 911 operational, accuracy and funding issues involved in Voice over Internet Protocol (VoIP) "911 calls". For the moment, many of these calls are being "specially handled" by the VoIP providers in compliance with a late 2005 FCC emergency order made necessary by VoIP's inherent inability to effectively route "calls" (they are actually data packet messages containing the voices of the parties) to the proper PSAP for the location where the initiating computer (**not a phone**) is located. But the issue is much broader than this. Today's "workarounds" are dealing with the process of forcing VoIP 911 calls into the traditional wired telephone network, and then trying to get them to behave like wired 911 calls. It is likely that the ultimate fix will be a total reconfiguration of the enhanced 911 call processing systems, to include the replacement or upgrade of all existing PSAP based equipment with full VoIP capable equipment.

Given the huge number of County and City PSAPs in Ohio which must rely on local tax funds for periodic upgrades of their E911 equipment *(because they get no meaningful 911 surcharge revenue)*, coupled with the high potential that the wired line 911 surcharge funds *(which the traditional wired phone companies keep to fund their recurring charges)* will decline as the usage of VoIP replaces wired phone lines in the state, there could be a significant mismatch between the need for money to replace this equipment and an entity's ability to pay for it.

All fourteen primary 911 PSAPs are clearly and distinctly law enforcement operations. This means that they are operated by, housed within, managed by, staffed by, funded by and supervised by the respective Sheriff or Police Departments in which they operate. (The lone exception being the Oakwood Public Safety Department, which is a fully consolidated police-fire service) This has created an environment where the fire and EMS agencies in the County not dispatched by the Dayton, Kettering or Washington Twsp. Fire Departments may feel "they are dispatched by the police" without any formal avenue for input, procedural or staffing decisions, or personnel reviews. *This is a very common situation throughout the USA, particularly in smaller urban and more rural areas*. Elsewhere in the report, we will offer our recommendations as to solving this "problem", be it perceived or actual. And even in the case of the three separate Fire Secondary PSAPs referenced above, law enforcement 911 operators still *initially* answer their calls.

Having set forth our very generalized observations of the "state of the art" in the County, we will now explore each of the operating PSAP entities, but before beginning that, we need to offer several general comments about the counting of activity and work load levels in the several PSAPs, the use of "per capita" cost comparisons, and formulas useful in determining staff required to operate a PSAP, as follows:

Note about "Counting Widgets: It has been our experience that "comparing apples to apples" in terms of PSAP activity levels from one agency to another is fraught with difficulty. Specifically, it boils down to issues like what activities a PSAP counts as a "dispatchable event", or whether or not a given PSAP is serves as the "administrative phone operators" for the agency 24 hours a day, and there are no uniform standards for these types of things. Certainly, there are all sorts of standards that relate to the counting and reporting of crimes and fires by type, classification, victim, value, time of day and on and on. These standards are even mandated in law and must be reported to the State and the FBI via the Uniform Crime Report. Unfortunately, no such standards are out there for PSAP activity counting.

The reason we try and get a count for this activity is to begin to model **"how busy would a consolidated PSAP be?"** Arguably, one of the ways to predict that is to try to quantify what

PSAPs are doing today, and how much of it, and of that work load, how much would be transferred over to the new PSAP to do. This is very important in estimating the staffing requirements for a new consolidated PSAP, and since many of the "go or no go" decisions about PSAP consolidation are made based on the estimates of how many employees will be needed and how much will they cost, this can be a crucial element. Logically, if some study estimates that the activity in the new consolidated PSAP would be "1,000,000 widgets per year" which would require 30 staff to handle, and it turns out that there are really 2,000,000 widgets per year to be handled, then the original assumptions of how much the staff will cost (which would now be woefully inadequate) are instantly invalid.

Per Capita Costs: To any per capita annual cost 911 dispatching/PSAP cost for a given city or township, one also has to add the amount that is collected from taxpayers in these jurisdictions via County taxes used to fund the Sheriff's PSAP. In other words, every resident (or taxpayer) of every municipality that operates its own dispatch center is actually paying twice. Once for their own local service, and then again for that portion of their County taxes that goes to support the Sheriff's dispatch operation.

Full Time Equivalencies (FTE) & Filling Chairs in a 24-7 PSAP:

Staffing numbers in 24/7/365 operations can often be a confusing issue. Simply put, it is a question of math, as follows:

- There are 8,768 hours in a non-leap year.
- A FT employee is paid for 40 hours per week x 52 weeks (2,080hrs)
- A FT employee is assumed to take 2.5 weeks (-100 hrs) vacation/yr.
- A FT employee is assumed to take 6 sick days (-48 hrs) per year.
- A FT employee is assumed to get 11 paid holidays per year (-88 hrs).
- Leaving a balance of 1,844 actual hours at work per employee/year
- However, when that person is scheduled and is at work, they are only available to be at their workstation about 85% of their work period. .85 x 1,844 = 1,567 physically deployed hours per year.
- Dividing 8,768 hours/yr. by 1,567 deployed hours per person we get 5.595.
- Therefore, it takes ABOUT 5.6 people to schedule one person to physically be in one chair for one year, 24/7/365.

1. Brookville Police Department

PSAP Location: 301 Sycamore St. (City Hall), Brookville
Radio dispatcher/911 call-taker workstations: 2

Current PSAP Inventory and Review

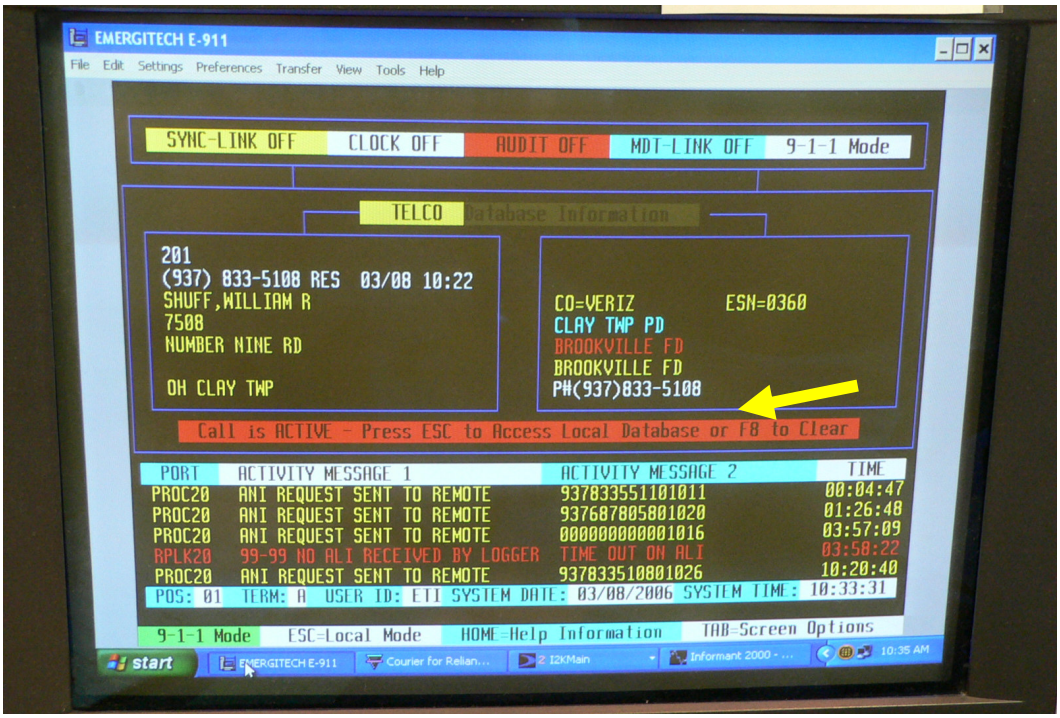
The Brookville PD is the Primary PSAP center for wired 911 call answering for Brookville, Perry Township and New Lebanon. It is operated by the Brookville P.D. and charges Perry Township and New Lebanon for the dispatch services provided.

This PSAP is located in the Police Department offices in the City Hall in Brookville. Pictured below is an overview of the PSAP showing the two radio dispatch and 911 call taking positions.

The PSAP is equipped with two economical (and relatively low tech) radio control consoles provided by CalTech VEGA, which access the local 150 MHz VHF police and fire radio channels (they are not subscribers to the County's 800 MHz trunked radio system), as well as the Inter-dispatch center "I-PSAP" talkgroup on the County's trunked radio system. It does not appear as if these consoles support channel to channel "patching". It is also important to understand that these radio control consoles **are not the radios themselves,** and bear no relationship to how well the

radios in the field and at the various towers may or may not perform. They merely provide the vehicle via which various radio channels can be selected and controlled by the dispatchers.

The PSAP has two Emergitech™ E911 cal taking workstations, equipped with two E911 trunk lines and Proctor™ ANI display and transfer units. These systems represent the state-of-the art of these products circa 1995, and are in need of upgrade. Shown below are the interactive ALI data screen for an wired E911 call and the Proctor ANI display unit. The way E911 works, as soon as the phone line rings, the wired 911 caller's phone number (ANI) shows up on the "Proctor box", even before answering. Upon answering, this ANI # is sent to the SBC E911 Automatic Location Information (ALI) database for an inquiry, and the data shown on the color PC screen represents that data. Note the data by the inserted yellow arrow. That is the ESZ data indicating which law enforcement agency (Clay Twsp. Police), fire agency (Brookville FD) and EMS agency (Brookville FD) are responsible for the address displayed in the left boxed area. It is unclear to us why a call for Clay Twsp. is being answered by Brookville PD, as we have not been advised of an dispatch services contract between the Brookville PD and Clay Twsp. PD.



The Brookville P.D. does not use a Computer Aided Dispatch (CAD) system. The Brookville P.D. does not offer provide "Emergency Medical Dispatch" (EMD) services.

NOTE: EMD is a service offering that is about 25 years old, and involves a higher level of training for call takers, enabling them to provide somewhat detailed "pre-arrival medical instructions" to callers using protocol driven software or manual flip charts. Simply put, EMD is designed to accomplish two objectives:

1. *To enable a willing caller (such as the mother of a not breathing baby) to be guided in providing some relatively simple life saving tactics (such as rescue breathing, airway clearing or stopping bleeding) pending the arrival of first responders, who would be en route to the incident while the dispatcher is advising the caller. This element virtually requires that the PSAP have two dispatchers on duty at all times, since putting a likely panic stricken caller on hold while radio dispatching or talking another phone call is impractical, at best. .*
2. *To perform "triage" on the incident, where appropriate and required, so as to ensure that only those EMS response resources <u>required</u> by this specific type of medical emergency are deployed. This is rarely the case in suburban or ex-urban PSAP areas, but is often critical in large urban areas where EMS resources are few and far between. Simply put, if one only needs a band-aid to stop bleeding, and the dispatcher has a choice between a rare paramedic life support unit from miles away, and a police officer with a first aid kit, this sort of triage enables that decision.*

In some states, the availability of EMD is approaching (if not already there) a mandatory status. Furthermore, more and more legal cases are resulting from failure to offer EMD when plaintiff's attorney's discover that an entity has made no arrangements for the provision of EMD services and they file a case where (at least arguably) the provision of EMD might have beneficially affected an outcome.

EMD does not have to be provided by the initial answering PSAP, but not offering it at that point in the process would necessitate transferring a call from a likely panicky person to another entity, and the risks and problems associated will 911 call transfers. We have seen agencies where EMD is provided by some other, larger PSAP, which usually also dispatches the EMS responders. Sometimes that is a private ambulance service dispatch center, sometimes the County, sometimes just another city.

One of the problems associated with the EMD decision in smaller agencies such as Brookville is the maintenance of the dispatcher's proficiency. The reality is that about 85% of all 911 calls are police related, leaving relatively few calls for fire and EMS. That may mean that in a full 2,000 work hour year, a given dispatcher may have only 3 or 4 EMD service opportunities, spread across several types of medical incidents, and it can be hard to maintain that important familiarity with the process if it is done so infrequently.

FCC Radio License Inventory and Review

All radio systems owners and operators are required to have valid FCC licenses for the operation of radio system equipment. Brookville Police and Fire hold FCC licenses on nine 150 MHz (VHF) radio channels, all of which have recently been renewed and will be valid until about 2014. **IMPORTANTLY**, however, none of the licensed radio frequencies has been re-licensed in accordance with the FCC's "Narrow Band" ruling, and this must be done by 2013, not to mention the potential expense of replacing base and field radio equipment that may not (or may) be "narrow band capable".

PSAP Activity and workload data:

With the earlier "counting widgets" caveat in mind, this PSAP's annual cost/activity data is:

# 7-digit calls	# 911 calls *	# Events Dispatched	Population served	# Full time equivalent (FTE) PSAP staff	Annual PSAP operating cost
34,712	4,848	22,023	15,704	5.0	$239,500

** An analysis of ALI data printouts during our visit indicated that 8 of 14 calls answered on the 911 lines were wireless 911 calls transferred here by other PSAPs (presumably the Sheriff, mostly), which (if indicative of each day) would mean that 57% of all 911 calls answered here are originally wireless 911 calls. This would be typical of the numbers we see elsewhere in similar environments.*
Notes on the above:

- **7-digit calls**: The PSAP reports that they are the "general phone operator" for the Brookville P.D. on a 24 x 7 basis for 7-digit callers.

- **# 911 calls**: Data from call tracking equipment represent the number of calls answered. They could be call-backs from an earlier incident, they could be multiple calls on the same incident like a house fire, they could be calls transferred to the PSAP from other PSAPs, etc.

- **# Events dispatched**: The number of times in the year when a dispatcher told a field responder to go someplace and do something and for which a tracking record was created in CAD, like "a tic mark being made" to keep track of how many times it was done during a year.

- **Population served**: In the case of the Brookville PSAP, we add the population of Perry Township (6,184) and New Lebanon (4,231) to the Brookville population of 5,289 to arrive at 15,704.

- **Annual Operating Cost:** The Brookville PSAP reports spending $239,500 in FY 2005 for dispatch services. This expenditure was broken out as follows:

    - Personnel: $211,700 (88.39%)
    - Equipment: $ 20,300 (8.48%)
    - Other: $ 7,500 (3.13%)

These cost figures work out to an annual cost per resident of $15.25 for locally provided dispatch services.

PSAP Staffing and deployment practices

The Brookville PSAP reports employing 4 full time and 2 part-time dispatch/911 operator staff. This level of staffing (assuming 5 FTE) generally permits an average of slightly more than 1 person on duty at a time, with slightly more than 2.5 average weeks of vacation and 6 average days of sick leave or the provision of some paid training time within the work schedule.

All employees are members of the Ohio Public Employees Retirement System (OPERS). As such, there is significant pension portability available to them. They are not represented by a labor union.

2. Centerville Police Department

PSAP Location: 155 West Spring Valley Road, Centerville
Radio dispatcher & 911 workstations: 2

Current PSAP Inventory and Review

The following information is extracted from the Centerville P.D.'s web site:

Communications Specialist Supervisor Judy Kuhns is in charge of one of the busiest operations within the Department. Communications Specialists have the daunting tasks of:

- Monitoring two computer screens, one that displays the status of all officers on duty, the other for typing information into a computer as it is received from the public or officers on the street.
- Answering two 911 telephone lines, three non-emergency telephone lines, and three internal telephone lines.
- Monitoring and responding to radio traffic from anywhere from four to seven road patrol officers, or as many as twenty officers during special events.
- Monitoring and responding to detectives conducting surveillance on a separate radio channel.
- Monitoring surrounding police agencies radio traffic on a police scanning radio.
- Monitoring the Washington Township Fire Department radio frequency for information concerning medic or fire calls.
- Running criminal history checks for Police Officers via the NCIC computer system, sending teletypes confirming warrants or the recovery of stolen vehicles, or alerting officers to teletypes from other agencies.
- Attending to citizen's who stop by the Dispatch Office requesting information or requiring police assistance.

The Communications Specialist is the first person that citizens speak with when they dial 911 to report an emergency, to report crimes, or to simply ask questions via the non-emergency telephone lines. Communications Specialist are required to keep their calm and quickly dispatch officers to where they are needed. That means on average, from the time the dispatcher answered a telephone call for emergency service until the time the first officer arrived on the scene, between three and four minutes had elapsed.

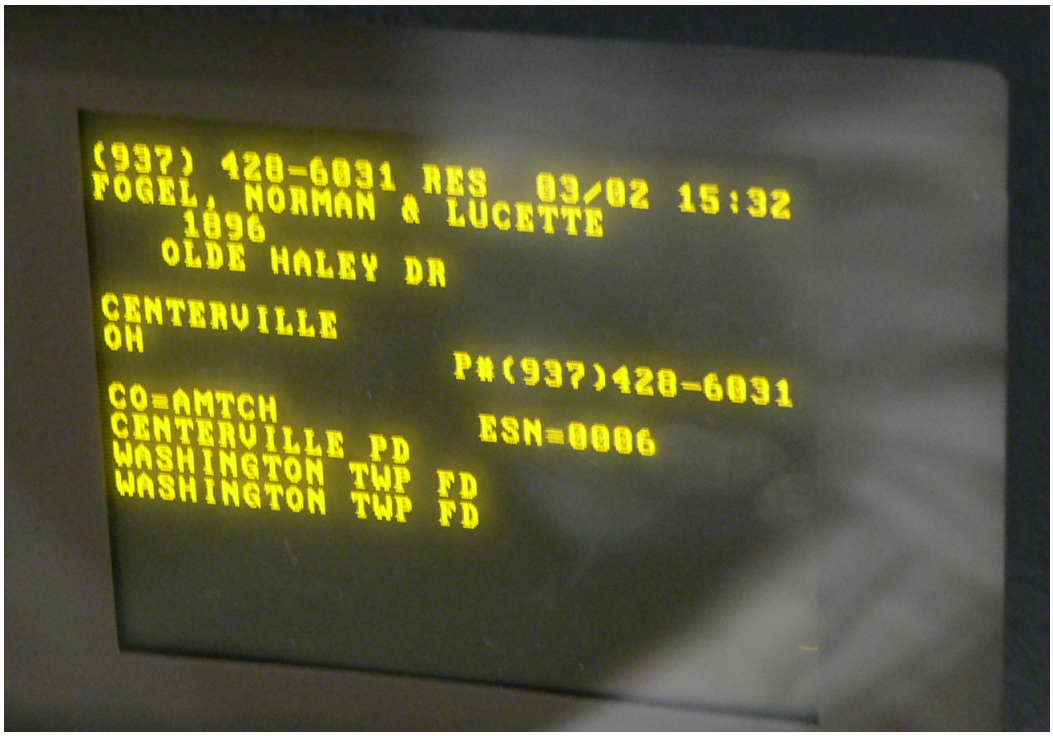
The Communications Specialist consist of six highly trained individuals handling daily dispatch operations. Judy Kuhns, Todd Rardon, Cathy Burke, Karen Steinke, Aaron Nicely, and Candice Oligee. The Centerville Police Department Cadets also assist with the dispatching duties.

The Centerville PD is the Primary PSAP center for wired 911 call answering for Centerville.

This PSAP is located in the Police Department offices in Centerville. Pictured below is an overview of the PSAP showing the two radio dispatch and 911 call taking positions.

The PSAP is equipped with the latest technology in radio control console equipment and software (Motorola CentraCom Gold Elite), CAD, GIS mapping with Automatic Vehicle Location (AVL), closed circuit TV monitoring and jail control and monitoring systems. The only equipment not of the current state of the art (although it has been recently updated as far as it can be taken) is the not state-of-the-art Positron E911 equipment. The radio control consoles provided by Motorola provide access to the local 800 MHz police radio channel (they are not full subscribers to the County's 800 MHz trunked radio system), as well as the Inter-dispatch center "I-PSAP" talkgroup on the County's trunked radio system, as well as console access to most of the other talkgroups on the County's trunked radio system. These consoles do support channel to channel "patching". It is also important to understand that these radio control consoles **are not the radios themselves,** and bear no relationship to how well the radios in the field and at the various towers may or may not perform. They merely provide the vehicle via which various radio channels can be selected and controlled by the dispatchers.

The PSAP has two Positron LifeLine 100™ E911 cal taking workstations, equipped with two E911 trunk lines. These systems represent the state-of-the art of these products circa 1985, but the software was recently upgraded to accept wireless E911 ALI data. Shown below is the ALI data screen for a wired E911 call. Note the ALI data is the ESZ data indicating which law enforcement agency (Centerville Police), fire agency (Washington Twsp. FD) and EMS agency (Washington Twsp. FD) are responsible for the address displayed. It is clear that in this case, that a 911 call requiring a Washington Twsp. FD response would have to be transferred to the WTFD PSAP.



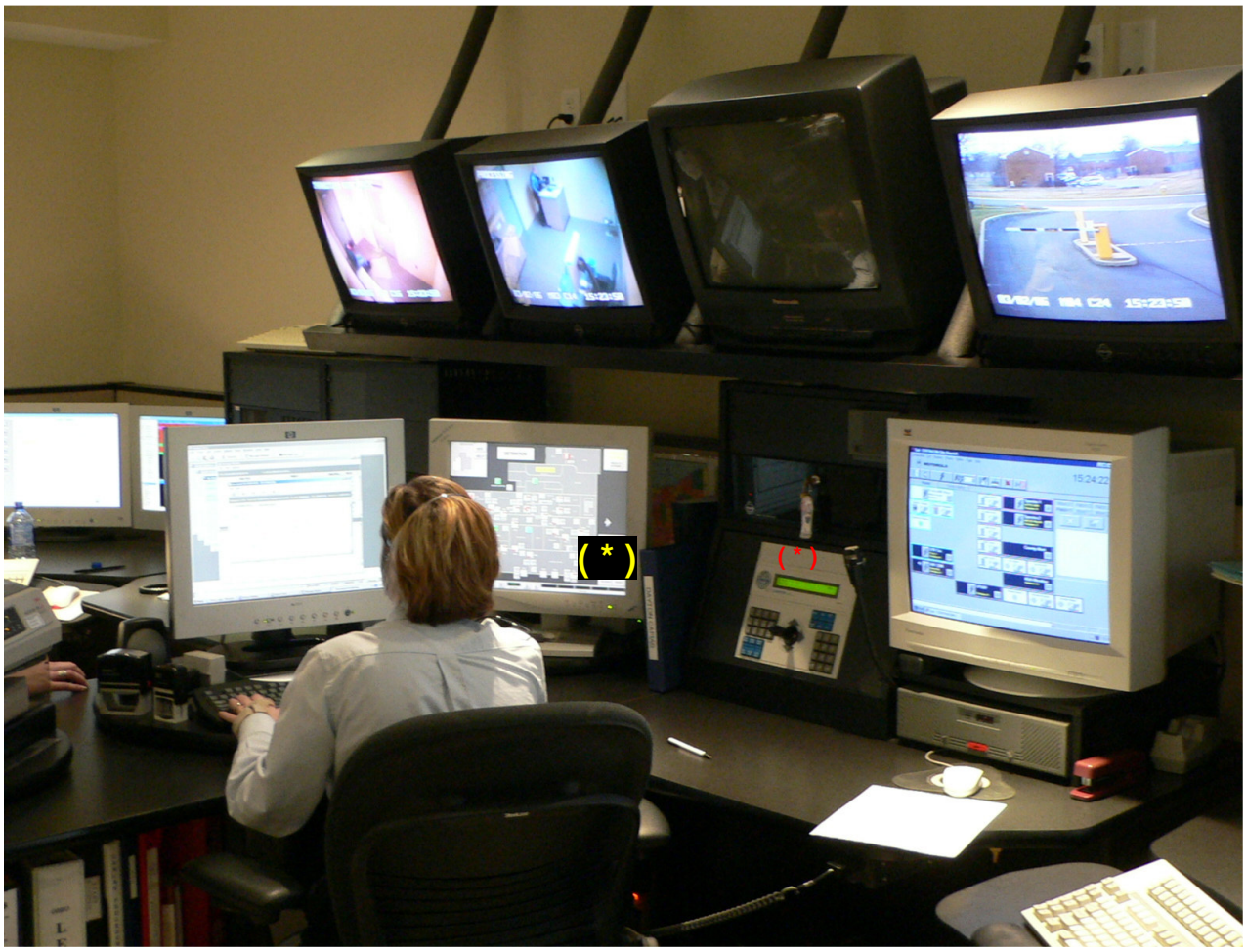
The Centerville P.D. uses a Computer Aided Dispatch (CAD) system provided by Shield Technology Corp, with two workstations. It is Windows™ based, and the CAD system is also closely integrated with the department's Shieldware™ Records Management System (RMS). The Centerville P.D. also enjoys the many benefits of Mobile Data Computers (MDCs), which are laptop PCs installed in police cars and interfaced via radio waves to the Department's CAD system, and via that system to the State of Ohio and national crime database and related systems. Of their many benefits, one of the greatest for MDCs is that they relieve the dispatcher of having to run so many data checks for field officers, who are now free to run them "without human intervention". Invariably this leads to a vast increase in the number of queries run, and a resulting increase in the number of stolen cars located, drivers arrested for license violations, etc.

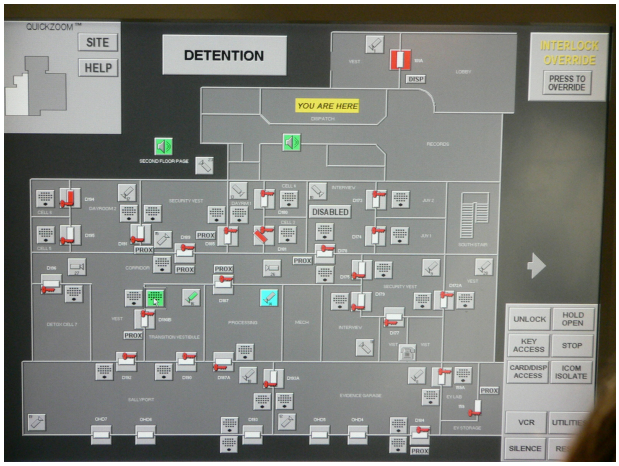
The Centerville P.D. does not offer "Emergency Medical Dispatch" (EMD) services.

Major difference in this PSAP:

Unlike many to most PSAPs, Centerville dispatchers have an essential role in the monitoring of and interaction with the Department's closed circuit TV system, especially as it relates to the prisoner booking and processing activities. While it is true that the assignment of this role and function to the dispatchers was an administrative decision in Centerville (most PSAPs have not gone to quite this extent), it cannot be dismissed, as the entire design of their prisoner movement system is dependent on a dispatcher in the PSAP watching the monitor and taking required door opening and door closing actions. The following pictures reflect this level of involvement in this role. The 1st photo shows the centrality of the jail door control PC (*) and the custodial monitoring systems (*).

(*)




QUICKZOOM
SITE
HELP
DETENTION
INTERLOCK OVERRIDE
PRESS TO OVERRIDE
YOU ARE HERE
DISABLED
UNLOCK
HOLD OPEN
KEY ACCESS
STOP
CARD/DISP ACCESS
ICOM ISOLATE
VCR
SILENCE


SALLY PORT
03/02/06 M02 C19 15:20:16


PROCESSING
03/02/06 M03 C14 15:24:55

FCC Radio License Inventory and Review

All radio systems owners and operators are required to have valid FCC licenses for the operation of radio system equipment. Centerville Police hold FCC licenses on two 800 MHz radio channels, and one VHF regional radio channel (155.370 MHz). Neither of the 800 MHz licensed radio frequencies is subject to the FCC's "Narrow Band" ruling, since that applies only to frequencies below 512 MHz. Equally important, these radio channels are operated in a "conventional" radio system, rather in a "trunked radio system" such like the County's system and the City of Dayton system, but their field radios can access both the Dayton and MCOS trunked radio systems.

NOTE: For a discussion of and greater understanding of the operation of "trunked" radio systems, see the Appendix for an article about them.

PSAP Activity and workload data:

With the earlier "counting widgets" caveat in mind, this PSAP's annual cost/activity data is:

# 7-digit calls	# 911 calls *	# Events Dispatched	Population served	# Full time equivalent (FTE) PSAP staff	Annual PSAP operating cost
85,775	5,309	29,376	23,024	6	$319,089

- **7-digit calls**: The PSAP reports that they are the "general phone operator" for the Centerville P.D. on a 24 x 7 basis for 7-digit callers.

- **# 911 calls**: Data from call tracking equipment represent the number of calls answered. They could be call-backs from an earlier incident, they could be multiple calls on the same incident like a house fire, they could be calls transferred to the PSAP from other PSAPs, etc.

- **# Events dispatched**: The number of times in the year when a dispatcher told a field responder to go someplace and do something and for which a tracking record was created in CAD, like "a tic mark being made" to keep track of how many times it was done during a year.

- **Population served**: Self explanatory

- **Annual Operating Cost:** The Centerville PSAP reports spending $319,089 in FY 2005 for dispatch services. This expenditure was broken out as follows:

    - Personnel: $282,049 (88.39%)
    - Equipment: $ 31,490 (9.87%)
    - Other: $ 5,550 (1.74%)

These cost figures work out to an annual cost per resident of $10.86 for locally provided dispatch services.

PSAP Staffing and deployment practices

The Centerville PSAP reports employing 6 full time and 0 part-time dispatch/911 operator staff. This level of staffing generally permits an average of a little more than 1 person on duty at a time, with slightly more than 2.5 average weeks of vacation and 6 average days of sick leave or the provision of some paid training time within the work schedule.

All employees are members of the Ohio Public Employees Retirement System (OPERS). As such, there is significant pension portability available to them. They are not represented by a labor union.

Additional data provided by the Centerville P.D.:

Staff at the CPD put in considerable time in documenting their activities for this study, and it constitutes a good representation of the breadth of work done by most dispatchers in most law enforcement PSAPs. For this reason we are including their information in the format in which it was submitted on the following several pages.

Centerville Police Department
Communications/Records Specialist Duties

All Communications/Records Specialist act in the capacity of Dispatcher/Building Security/Jail Security/Records Keeper/Building Receptionist and are responsible for all tasks listed below:

Dispatch:

Activity	Avg # Per Day	Hrs. Per Day	Avg # Per Year	Hrs Per Year
Answer Phones (2/ 9-1-1 lines, 3/ General Requests, 4/Internal Communications, 1/ Hot Line to WTFD) This includes taking messages for officers, re-routing calls, answering citizens' general questions regarding laws, giving directions/PS#s, general advice, up-coming events, advising status of complaints, answering questions about warrants, calling businesses/employees regarding alarms, updating business information, etc. Generally providing pubic service information to citizens.	250	6.00	91,250	2190.00
Monitor TTY equipment	continual 24/7			
Handle Radio Traffic (Dispatch calls, check-up on officers' safety, record officer active (pursuits, etc.) give directions, phone numbers, LEADS information, search and advise needed RMS information, etc.)	422	2.50	154,030	912.50
Enter all calls and radio traffic into DCAD (log pursuits, pertinent data regarding the calls, extra patrol requests, officer safety issues, etc.	610	3.00	222,650	1095.00
Log personnel on/off duty	6	0.50	2,190	182.50
Send pages to personnel of weather emergencies, SWAT call-outs, general information, etc.	3	0.50	1,095	182.50
Activate CodeRed and A Child Is Missing notifications via Internet (obtain pertinent information, draft dialog, access the Internet, select geographic area to notify, activate the phone calls, etc.)	sporadic		3	1.50
EOC: Notify personnel of activation, assist in setting up the EOC and staffing the EOC and Dispatch with additional personnel.	sporadic			
Monitor and send E-mail messages to personnel for information exchanges	3	0.50	1,095	1.50
Monitor Fire Dept./EMS traffic and advise officers of calls in our jurisdiction as well as emergency equipment responding to addresses in surrounding jurisdictions that may be traveling through our City.	continual 24/7			
Monitor IPSAP/LE and OP channels for emergency issues and notifying officers events taking place in surrounding jurisdictions which may subsequently involve our City (bank robberies, shoplifting, pursuits, etc.)	continual 24/7			
Monitor Weather Channel for emergency issues	continual 24/7			
Maintain Vacation House Check file, logging pertinent data, pulling upon return.	2	0.15	730	109.50
Maintain Elderly Check-In file speaking each day to those on the list and sending officers to check on those who do not respond.	6	0.25	2,190	91.25
Maintain Animal Log (Log animals citizens report as missing and those that have been found) Notify Animal Shelter	1	0.15	365	54.75

Centerville Police Department
Communications/Records Specialist Duties

Maintain Vehicle Tow Log (Call tow companies to respond, maintain a log with pertinent data, update hold information and answer inquiries.)	2	0.50	730	365.00
Monitor and Maintain Bldg and Vehicle Key Usage (Keep log of who obtained keys, time in/out.)	continual 24/7			
Maintain log of maintenance personnel on post (Open security gates, direct them to various areas of the bldg, log time in/out)	continual 24/7			
Maintain Equipment (paper supply/ribbons, clean)	sporadic			
Process Fingerprint Cards	1	0.1	365	36.50
Receive/Disburse Subpoenas	sporadic			
Assist compile statistic reports	sporadic			
Assist with creating and updating training manuals/phone lists, emergency manuals, general instruction manuals, etc	sporadic			
Train new personnel in dispatch, records, cadets and some areas of the officer training related to dispatch/records.	sporadic			

LEADS:

Runs LEADS Inquires	211	2.00	77,091	730.00
Runs CCHs	8	2.00	2,846	730.00
Enter information into LEADS/Stolen vehicles/license plates/guns/property/missing/runaway persons, warrants,etc.	5	1.00	1,750	365.00
Send TTs through LEADS for BOLO/Officer Safety Issues/Announce Training Opportunities, etc	2	0.20	730	73.00
Monitor LEADS for BOLOs/Important Officer Safety Issues	continual 24/7			

Building Security:

Monitor Bldg Security Cameras	continual 24/7			
Change Camera Tapes Daily	2	0.25	730	91.25
Activate Secure Door Locks/Gate Entry for Visitors/Repairmen	sporadic			

Jail:

Monitor Jail Cameras for officer safety	sporadic			
Activate Sally Port Doors/All Jail Doors/Lights, etc	sporadic			
Activate Evidence Bay garage doors	sporadic			
Monitor Jail Cell Phones	sporadic			
Monitor Prisoners for prisoner safety	sporadic			
Notarize affidavits, summons, etc.	sporadic			
Accept and Process Bond (call bondsmen, get credit cards authorizations, etc.)	sporadic			

Records Management System:

Enter Police Reports into RMS	15	2.00	5,475	730.00
Enter Traffic Citations/Written Warnings into RMS and enter case dispositions	26	4.00	9,490	1460.00
Enter FI's into RMS	12	1.00	4,380	365.00
Enter Property into RMS	5	1.00	1,825	365.00
Second-party check officer Arrest entries and enter case dispositions	5	1.00	1,825	365.00
Enter and deleted Warrants into RMS	3	0.50	1,095	182.50
Enter and delete Warrants into LEADS	3	1.50	1,095	5475.00

Centerville Police Department
Communications/Records Specialist Duties

Process Expungements (pull reports/redact information, deleted entries in DCAD/RMS, notify Detective Section, notify BCI/FBI, send letter to Miami Valley Crime Lab to pull fingerprint cards)			24	12.00
Process Paperwork for Court (type/copy reports, gather supporting documents)	6	1.00	2,190	365.00

Police Receptionist:

Greet citizens, provide safe haven for citizens in distress, answer general questions, take on-post complaints, process records requests, take witness statements, notarize documents, process mail, accept deliveries, direct maintenance persons, take messages, complete background checks, compile statistics, act as receptionist for training center, assist instructors with audio/visual equipment set-up, copy training materials, etc.)	continual 24/7			
Background Checks	6	0.50	2190	182.50
Type Reports	10	5.00	3,650	1825.00
Type City Manager's Significant Incident Report	1	0.50	365	182.50
Records Requests/Copy of Reports, Statistics, etc	5	1.00	1825	365.00

Lunch Break	6	3.00	2190	1095.00

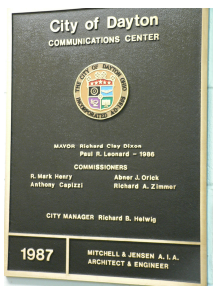
Total Measurable Hours Per Year				17078.75
Hrs per day (divided by 6 employees)			7.79	
Total Measurable Hours Per Day		41.60		
	13.87			
Hrs per day (divided by 5 employees)	8.32			

Centerville Police Dispatch – Clerical Tasks and Duties

(As submitted by Centerville PD)

- Receives and transmits radio communications (dispatches officers to geographic location of complaint; dispatches proper number of units and equipment; coordinates backup support with other jurisdictions)
- Receives emergency and non-emergency requests from service agencies and public and obtains pertinent information.
- Maintains records on various forms, logs and computer entries.
- Operates equipment (LEADS computer terminal, telephones, radios, etc).
- Receives and verifies vehicle license and registration information.
- Contacts Public Works division for all service requests
- Analyzes computer printout to ascertain pertinent information.
- Performs a variety of clerical tasks, such as typing, filing and cross —indexing of reports, arrest records and officer statements; performs data entry.
- Prepares and compiles monthly reports for Police Chief and other law enforcement agencies; maintains records as required by the Ohio Revised Code regarding impounded vehicles for the police division; prepares monthly Uniform Crime report (UCR) and compiles monthly statistics and yearly reports.
- Prepares and maintains all LEADS correspondence, entries, deletions, warrant transactions (certifications); attends LEADS training sessions.
- Files daily (mug books, master files, accident reports, FIR entries, LEAD entries, photographs (evidence), complaints (civil/criminal/fire/squad), offense reports, daily correspondence, official logs, monthly/yearly night reference files, daily issued division warnings, etc.
- Serves as receptionist for citizens entering police station after hours.
- Assists on research projects (collects, analyzes, collates statistics and information etc.)
- Enter all data into computer such as citations, warnings, field interview cards, incident reports, follow up investigations.
- Type and prepare all reports for court Prepare reports for detectives
- Receive payments for reports a Balance bond box
- Assist citizens with fingerprinting, retrieving property from property room and appointments with other staff employees
- Monitor jail, prisoners in the jail and/or processing and officers (while they are processing a prisoner)
- Monitoring the Intergrator System
- Monitor cameras Monitor all radio traffic
- Monitor Washington Township Fire Department traffic
- Enter all stolen vehicles, license plates, articles, missing persons
- Activate Code Red when necessary
- Log elderly well-being checks
- Maintain all trespass and TPO files
- Send all training teletypes to surrounding counties and jurisdictions
- Maintain BCI cards
- Report and document all employee absences
- Log all private property tows
- Log all repo tows
- Receive all UPS, DIlL, FED-EX deliveries
- Receive and sort incoming mail
- Complete background checks upon request
- Assist staff with citizen tours
- Complete City Manager reports (daily)
- Receive all court paperwork and distribute to the appropriate staff (subpoenas, warrants, dispositions)
- Complete all officer's requests (contacting animal shelter, public works)
- Assist with all K-9 requests from other agencies
- Operates TTY machine
- Distribute reports/documents to appropriate agencies (law firms, Dayton Daily News, CB times, etc

3. Dayton Police Department




PSAP Location: 2nd floor, Signals Bldg. 15 E. Monument Avenue, Dayton
Radio dispatcher workstations: 5
PSAP call taking workstations: 10

Current PSAP Inventory and Review

The City of Dayton Police PSAP is the dispatch center for all law enforcement operations for the Dayton Police Department.

As stated above, there are 10 dedicated 911 and 7-digit call taking positions at which radio control consoles do not exist, and 5 separate workstations at which radio dispatch equipment, but not 911 call taking equipment exists. At the Dayton Police PSAP an operating mode known as **TWO STAGE DISPATCH** is in use. Specifically, this means that the overall process of call receipt and dispatching is divided into two different steps, handled by two different people. And, in the case of the Dayton P.D., these two different staff positions are occupied by two different types of employees. The "Emergency Telephone Operators" (we'll refer to them as 911 operators) are 100% civilian employees, and are not in the same labor union as the radio dispatchers. The radio dispatchers are all Dayton Police Officers, not generally on voluntary assignment, and are somewhat physically separated from 911 operators. This staffing and deployment model was somewhat common in large, main line urban police dispatch centers at the advent of 911 in the 1980s, but has largely been abandoned in most such organizations today. Today, it is almost universal to find a 100% civilian work force, which may or may not all be of the same job classification. Some entities choose to have an "entry level" 911 operator position and then a promoted "radio dispatcher" position (who can also handle 911 operator duties). But it is extremely rare to find sworn officers still mixed with civilians, much less of different unions, and especially rare to find situations where the officers are on involuntary assignments to communications.

Operationally, in these Two Stage PSAP operations, the 1st "stage" is the answering of the call and the collection of information from the caller regarding what is happening, where, when, who is doing it and so forth. At this stage, the "call taker" sends their collected information to the radio dispatcher for subsequent action. In most two stage PSAPs today (Dayton is no exception), this information is sent to the dispatcher (who may be a few feet away --- as is the case in this PSAP) or who may be blocks or miles away via a Computer Aided Dispatch (CAD) system, but in older days, it was written on a card and sent to the dispatcher on a conveyor belt.

At the second stage --- the dispatch stage, there are usually multiple different dispatch workstations to which a given event's information (from the call taker) might be sent. Which radio dispatch position the CAD event is sent to is a function either what part of the dispatch agency's jurisdictional area the event is happening in (which "radio zone"?) as in the case in this PSAP, or

which specific type of response agency (police, fire or EMS) needs to be dispatched, which is NOT the type of 2 stage dispatched employed at the Dayton PD. For this type to be in place in Dayton, the calls for fire and EMS would not be transferred to Fire (as they are now) and all events would be entered by the 911 operators in the Police PSAP, and then the CAD events would be electronically presented to the appropriate police, fire or EMS dispatchers. These radio dispatchers may or may not be in the same room as the 911 call takers, although "best practices" indicate that things work better when they are co-located in the same room.

Two stage dispatching tends to be a "necessary evil" in larger PSAPs, where it is simply not practical to have four or more workstations that both answer the phone and talk on the radio in a somewhat uncontrolled "first come, first served" basis as it relates to who talks to and manages the response units on the radio.

At the DPD PSAP, like in many two stage PSAPs, the radio dispatch positions also have been equipped with 911 and 7-digit call taking equipment. This is done because it can provide for an overflow call taking capacity during such events as severe storms, as well as enabling the radio dispatchers to participate in on an "in-progress call" to get instant information to update responders, when required.

This radio dispatch side of the facility is equipped with five Motorola CentraCom Series II radio control consoles five workstation console system. These consoles are very near their functional obsolescence and will need to be replaced rather soon. This console system provides the dispatcher interface to several radio channels (and associated base and repeater stations) used by the PSAP staff for emergency and administrative communications with field units from the Dayton Police Department.

Overall photos of the Dayton PD dispatch center are on the following page:

Above left: The police radio side as seen from the shift supervisor's workstation. There are two "working channels" (which each handle one geographic part of the city) on the left side, always staffed with one police officer each. On the right side of that part of the room (still the left picture above) ate two more radio positions, which are rarely staffed with working zone dispatchers, but may be staffed with "light duty" officers doing some "Telephone reporting/call diversion" type work or managing some special event. The shift supervisors are Police Sergeants (again, not necessarily on voluntary assignment), who oversee both the "police radio side" and the "civilian 911 operator side" of the operation.

Above right: This is the "911 call taking side of the room". It is physically separated from the police radio side of the room by a partition, but not a solid wall. There are 10 workstations here; all configured the same, all doing the same work of answering inbound calls to 911 and the 7 digit "emergency numbers".

Left: Taken from the "911 operator side of the wall" showing the partition between the call taking and radio dispatching sides of the PSAP

Right: Showing the two main police zone radio dispatch positions (with third trainee observing between the two positions)

Left: Shows a 911 operator position with the Positron "Power 911" screen on the left and the CAD system terminal on the right. *(Note the meal being consumed at the work station)*

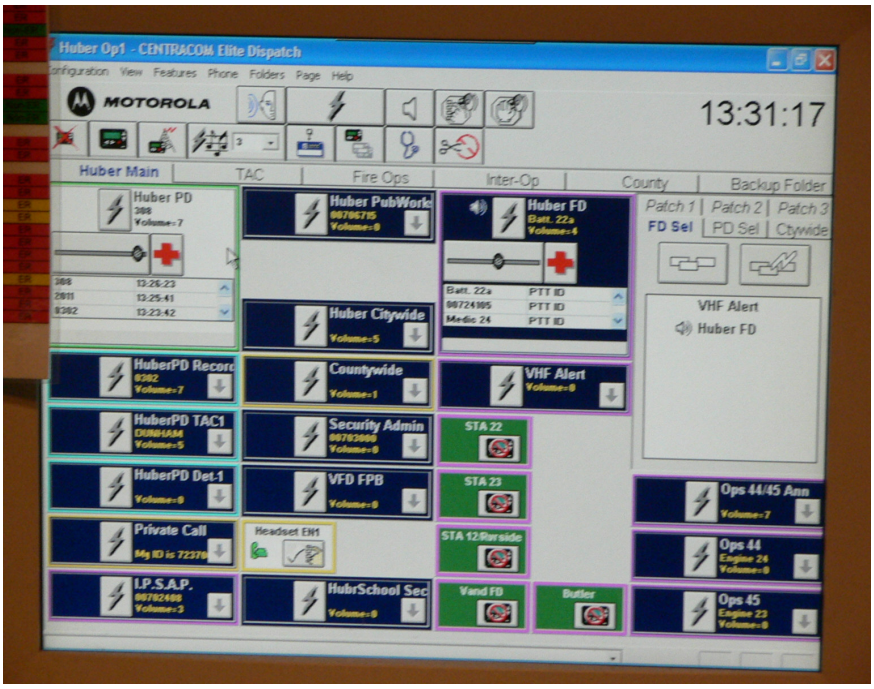
LEFT: The Positron™ "Power 911" workstation screen at which 911 and 7 digit calls are answered.

Simply put, this is a big, PC driven phone instrument via which calls are answered, E911 data is displayed, persons are put on hold, calls can be transferred to preplanned destinations or regular dialed numbers. Also, via this screen calls are recorded and played back, and the operator can engage in a teletype type call with a deaf caller.

LEFT: This is a screen of the ADSI CAD system. This particular screen Is one of several. It happens to be the "UNIT STATUS" screen, which shows two columns of "signed on" police units (the unit # column on the left side is cut off), along with their status, location and times.

Note in the right column, Unit 533A is on a "DRUGS" event at 905 Neal, and he has been "SCENE" (at the scene) for 8 minutes.

Above: This is the heart of one of the five obsolete Motorola CentraCom Series II radio control consoles. Each vertical set of buttons and lights (yellow arrow) represents one radio channel in conventional radio systems or radio talkgroup in trunked radio systems, such as that operated by the Dayton PD. Today, virtually all of the above functionality is accomplished on PC terminals, which are much smaller and much more flexible. For purposes of illustration, shown below is the latest version of the Motorola CentraCom Gold Elite PS based console screen in use in the Huber Heights Police PSAP. Both units perform essentially the same functions.



PSAP E911 Telephony:

The Dayton PD PSAP performs as a **Primary PSAP** for the initial answering of all calls dialed to 911 from within Dayton, and radio dispatches the DPD from this facility. EMS and fire calls that are answered here are transferred to the Dayton Fire secondary PSAP, as the DFD serves as the First Responder to medical emergencies in the city. The staff in this PSAP is not EMD certified, and EMD services are not offered. It is equipped with ten full Positron "Power 911"™ E911 workstations. Each equipped with fourteen 911 trunks. This equipment is owned by the city and is approaching 10 years in service, and will need to be upgraded or replaced fairly soon as it is, neither VoIP nor wireless E911 Phase 2 compliant, especially lacking GIS mapping and MSAG valid map data so necessary to plot wireless "Phase 2" calls.

PSAP Activity and workload data:

With the earlier "counting widgets" caveat in mind, this PSAP's annual cost/activity data is:

# 7-digit calls	# 911 calls *	# Events Dispatched	Population served	# Full time equivalent (FTE) PSAP staff	Annual PSAP operating cost
258,610	105,757	189,887	166,179	48	$3,174,600/ $3,697,661

Notes on the above:

7-digit calls: The DPD PSAP answers only DPD 7-digit calls where the caller chooses to dial the Department's published 7 digit alternative to 911 number. On the following page we have reproduced the DPD's guidance from their web site on when to call 911 and when to dial the 7 digit number.

#911 calls: Data from the Positron call tracking equipment represents the number of 911 calls answered. They could be call-backs from an earlier incident, they could be multiple calls on the same incident like a house fire, and they could be calls that are subsequently transferred to the DFD Secondary PSAP for EMS service, or any other PSAP, as required. 105,757 calls averages out to about 290 calls to 911 per day or an average of just over twelve per hour.

 # Events dispatched: The number of times in the year when a DPD dispatcher told a DPD field responder to go someplace and do something and for which a tracking record was created like "a tic mark being made" to keep track of how many times it was done during a year. Unlike some jurisdictions, Dayton Police and Fire count an incident as one event, regardless how many units are sent. For example, a traffic accident with injuries is counted as one fire incident and one police incident, even though multiple police, fire and/or EMS crews may be dispatched

Annual operating cost: As reported by the DPD in our survey. It should be noted, however, that the total operating budget for this PSAP (over and above the $3.174 million) also includes many items likely not captured (or able to be captured) in other agency's budgets, such as custodial staff, tech support costs, etc. For example, there are $730,533 in total costs reported by the DFD and the DPD not attributable to working staff and some of which are shareable between the two agencies who share the same stand-alone facility. Since the DPD has 71.6% of the total staff complement (48) of the 67 deployed to both departments, we will allocate 71.6% of this $730,533 ($523,061) to the DPD budget bringing the total to $3,697,661. Spread out over the 166,179 population, this figures out to an annual per capita cost of $22.25, **for police dispatch & 911 call taking only.**

When to Call 911

- **911 is for emergencies only…fire, medical, or police emergencies…, and when an immediate response is required!**
- If you are unsure how serious an incident is, call 911. Assistance will be dispatched to the most critical calls first.

CALL 911:

- When there is an **emergency, lives** are in **danger**, and **immediate** action is required, such as a burning building or vehicle, serious injury or medical condition (i.e.; a heart attack), or an **in-progress** crime situation such as a shooting, stabbing, armed robbery, etc.
- When there is a good chance of **arresting** a crime suspect, or of **preventing** the development of a serious crime situation by reporting suspicious persons, vehicles or circumstances, threats of violence or injury, disturbances or actions which, if not controlled quickly, could lead to an emergency.

When to Call the Non-Emergency Number 333-COPS (2677)

- **Unless you need an immediate response to a fire, medical or police emergency, call the Non-Emergency number at 333-COPS**.
- Using the non-emergency number 333-2677 helps keep the 911 lines available for persons reporting emergencies. While the vast majority of our incoming calls come through 911, most are not emergencies and should more properly be called in on the non-emergency number.

CALL 333-COPS:

- To report an incident to the Police Department that does not require the immediate dispatch of an officer to the scene, or when some time has elapsed since the occurrence of the incident, such as reporting a burglary or car prowl, theft, etc. that occurred while you were gone or out of town.
- Other kinds of calls that are appropriate for this non-emergency number would include nuisance complaints such as noise, parking, etc.

Please note that increasing the use of the non-emergency number and reducing the use of 911 to emergencies only will help insure that 911 is readily available to all citizens during real emergency situations.

PSAP Staffing and deployment practices:

The DPD PSAP is funded for twenty eight (28) full time civilian 911 call-takers they call "Emergency Operators". Without overtime, this level of staffing should permit around 6 on duty at all times on average. If needs based staffing is deployed (call data is used to allocate staff by busy time periods) they could have more than 6 on duty, while during slow periods they would have somewhat less than 6 on duty. This represents one of the advantages of a "two stage" dispatch operation, and one reason they are so common in larger police agencies. Specifically, one can tailor the number of call taker staff on duty to the historical and expected call load for a given time period. We have seen PSAPs this size where one might see three basic shifts of 4 persons on duty, round the clock, with extra "power shifts" of one, two, three or up to 5 persons added in 4, 6, 8 or 10 hour increments (depending on whether or not permanent part time positions are allocated). However, if one has "one stage dispatch" where the call takers are also the radio dispatchers, and if one is committed to a set number of "radio channels/zones", then the number of staff one needs and can use at any time is pretty set in concrete.

DPD also staffs 10 FT Police Officer positions to serve as the "zone/channel dispatchers". As we stated earlier, the DPD staffs two radio zone positions per shift, meaning the city is divided into two radio zones, with one of the two officer/dispatchers handling one zone and the other the other zone. This staffing pretty much works out to having enough officers to staff these 2 positions 24 x 7, without much extra staff time to deploy.

In addition to the above working staff, the DPD also has allocated 7 Police Sergeant positions, with 6 to serve as Comm Center Shift Supervisors and one as the 911 coordinator (mostly responding to public requests and subpoenas for 911 call recordings, radio audio recordings and CAD incident data, as well as maintaining E911 data and E911 Master Street Address Guide data), as well as a Police Lieutenant who administers the CAD, mobile data, RMS and radio systems, and a civilian Systems Analyst (for CAD and other technical systems), a Typist II as the Communications Bureau secretary, and one Police Lieutenant as the Bureau Commander. The total staffing above, works out to 49 FTE.

As alluded to earlier, the practice of deploying police officers as working dispatchers has dwindled to almost non-existent in the 911 service today. A few more agencies deploy sworn personnel used only as shift supervisors, but not as working dispatchers, and a few more deploy Police Lieutenants or Captains as Bureau Commanders, while all of the rest of the staff are usually civilian. Some of the reasons behind this migration to "civilianization"" of dispatch centers have been:

- The different skill sets required for a call-taker or dispatcher vs. a field police officer.
  - High speed typing, for example
  - Major multi-tasking, for example
  - Ability/willingness to be sedentary for hours on end
- Reduced (generally) costs for civilian wages and pensions.
- Reduced pre-hire and post-hire training costs/time for non-sworn staff

PSAP Data Systems (CAD, etc.)

The DPD PSAP uses an Application Data Systems Inc. (ADSI)™ CAD system to support their workload. This is a very popular and competent CAD vendor with a national footprint. The DPD also operates Mobile Data Computers (MDCs) in most police cars, interfaced with the ADSI CAD

system, running on an 800 MHz data radio system. Properly functioning, all these systems do a great deal to make the process of handing this workload as efficient as possible.

The DPD shares its ADSI CAD system with the Dayton Fire Department. This means that all of the police call taker, police radio dispatch, police supervisory, fire call-taker/radio dispatch and supervisory positions are connected to and working on the same CAD system. It also means that the field terminals for both agencies (MDCs) that are accessing "their agency's CAD" are capable of interacting with either agency's CAD, at least electronically, depending on permission and authorization levels.

This is a good and efficient arrangement, and far superior to some cases where we have seen major city police and fire departments operate on separate and not directly compatible or interoperable CAD systems.

However, despite this level of electronic interoperability between the DPD and DFD CAD users, it appears as if there is only a very limited actual interoperability between the two users. Simply put, there are a number of CAD functions that could be performed by a police or fire CAD user involving updating or looking at or dealing with an incident in the "other agency's" CAD system, but the ability to perform or the permission to perform such functions has not been implemented between the two organizations.

Here's a good example of what we are talking about:

- A 911 call is received reporting a serious car accident at the corner of West 3rd and North Ludlow in downtown Dayton.
    - Such an incident calls for a response from police (for traffic control), fire (for extraction) and EMS for injured transport.
- The Police Emergency Operator creates a police event in CAD for the police response to the incident and transfers the caller to fire.
    - Said event is routed to the police radio dispatcher for downtown Dayton, who then assigns one or more police units to the scene, as required.
- The fire dispatcher creates an event for fire and EMS response and then that operator (or other team members) do the fire station alerting (if the response rigs are in quarters) or radio dispatching (if they are on the street) to start them responding to the incident.
- One police car is the first to arrive on the scene.
    - This officer discovers that this isn't such a serious accident after all, that there are no trapped parties requiring extraction and, in fact, not even any injured parties. In other words it is no longer necessary for fire and EMS units to proceed to the scene at all.
    - The police officer radios to the police radio dispatcher to "cancel fire and EMS."
- At this point the police dispatcher, upon hearing this information from the officer on the scene **could, if permitted**, access the fire event in the CAD system and update it to cancel the fire and EMS response. In so doing, this updated info would be presented to the fire dispatcher(s) and they could get on the radio to cancel their responders. Even if such event access is not permitted, the police dispatcher COULD send a text message via CAD (kind of like an instant message within an e-mail program) to the cognizant (or all) fire dispatchers, advising them that they can cancel the fire/EMS response. But, more likely, the

police dispatcher will pick up the phone and call the fire dispatcher and tell them to cancel.

- A final refinement to all of the above, which has been implemented in a number of PSAPs, would be to train and permit the initial 911 answering Emergency Operators (EO) on information gathering and CAD event creation for police, fire and EMS incidents, thereby eliminating most call transfers.
  - Under such a system, in the above example, the EO could create an incident called (example only) "PIACC" (personal injury accident) which would clone itself into at least two sub incidents, one for police and one for fire. (A 3rd clone could also be made for EMS if they were dispatched separately from fire) The main incident would have an Event Serial Number (ESN) of 12345 (for example), with the police version of said even being 12345P, and the fire version being 12345F, and the EMS version being 12345E. Then, any person anywhere on CAD could do something called "ADD REMARKS" to the event. If it was a police dispatcher wanting to cancel fire's response, they would retrieve the event 12345F, and ADD REMARKS saying CANCEL FIRE. Or if it was a fire dispatcher who needed the cops at a medical emergency due to an unruly crowd, the fire dispatcher would pull up 12345E, and add POLICE to the event, which would create a clone and send it to a police dispatcher for assignment.

4. Dayton Fire Department

PSAP Location: 1st floor, Signals Bldg. 15 E. Monument Avenue, Dayton
Radio dispatcher & 911 call workstations: 5

Current PSAP Inventory and Review

As referenced in the Dayton Police section earlier, the City of Dayton operates a separated police and fire dispatch system. Under this system the call flow is as follows:

- Potential caller makes decision on whether or not to call anyone.
- If caller decides to dial **911,** it is initially answered at DPD Primary PSAP
  - If call is for POLICE, it is handled at DPD Primary PSAP totally
  - If call is for EMS, its transferred to DFD secondary PSAP downstairs
  - If call is for FIRE, its transferred to DFD secondary PSAP downstairs
  - If call is for any *combination* of Police, Fire or EMS service, the initial police response info is collected (what's happening? location? any guns? Suspect descriptions? Vehicle descriptions?) by the DPD Emergency Operator, and then it's transferred to DFD secondary PSAP downstairs.
    - In all of the above, if a response is appropriate or required, information is collected from the caller, and responders are radio dispatched or assigned to the incident, and their response and activity is tracked by the appropriate service dispatcher.

OR

- Caller believes their need to be police related and dials the "non-emergency" **333-COPS** number and is answered at DPD Primary PSAP *(without the advantage of E911 ALI and ANI data)*
  - If no police response is required, advice is given or other information (as appropriate) is provided, and call is ended.
  - If a response is appropriate or required, information is collected from the caller, and responders are radio dispatched or assigned to the incident, and their response and activity is tracked by the DFD dispatcher

OR

- Caller believes their need to be fire or EMS related and dials the "non-emergency" **333-FIRE** number and is answered at DFD Secondary PSAP *(without the advantage of E911 ALI and ANI data)*
  - If no response is required, advice is given or other information (as appropriate) is provided, and call is ended.

- If a response is appropriate or required, information is collected from the caller, and responders are radio dispatched or assigned to the incident, and their response and activity is tracked by the DFD dispatcher.

The DFD secondary PSAP operation is located in the same building on Monument as the police primary PSAP. It has its own staff, managers and equipment.

A view of the Dayton Fire secondary PSAP and dispatch centers is shown below with three positions on the left, one on the right (occupied chair) and one is in the lower right foreground (not shown). The Supervisor's (Fire Lieutenant) is in the center background (red chair).

Within this PSAP they (unlike the DPD upstairs) operate a "one-stage" call taking and dispatch operation. That means that the person who answers the phone call (be it 911 or 333-FIRE) enters the response event into the CAD system and can (and usually does) the alerting and dispatching of the response units to that incident. However, fire service and EMS dispatching tends to be much more of a "team" effort than does police dispatching. In other words, with the exception of things like major grass fires, multiple storm damage incidents and so forth, the fire service dispatch team tends to deal with events serially as opposed to police where they are often dealt with in a parallel fashion. This means that one or more of the fire dispatch team may take an active role in the various smaller tasks (notify the Chief, notify the gas company, notify the Water Department, etc.) related to the one main task (managing communications) for one event. In police, however, in most cases, one person does the information collecting (911 call taking), and then one person does the radio dispatching and related work (police officer).

Pictured below is one of the 5 workstations in the DFD dispatch center:

Note above one of the three obsolete (same as in Police) Motorola CentraCom Series II radio control console, but there are also two more current model Motorola CentraCom Gold Elite PC based consoles in the room as well, as shown in the picture below:

The DFD PSAP also handles dispatching for fire and EMS events for the neighboring cities of Riverside and Trotwood, on a contractual basis. In these events, since the Riverside and Trotwood Police departments are dispatched by the Montgomery County Sheriff's PSAP, and since primary PSAPs (the initial answerers) are almost always the law enforcement PSAP for a given jurisdiction[26], that means that 911 calls from Riverside and Trotwood addresses are selectively routed to the MCSO PSAP, and the MCSO 911 operator then transfers the fire/EMS call to the DFD PSAP for processing, and the DPD PSAP has no role in that event.

EMD in Dayton:

Medical Emergency calls in Dayton are processed by the DFD PSAP operators, and Emergency Medical Dispatch (EMD) is offered and provided, using the Powerphone™ protocols, but they are moving to the APCO™ protocols soon.

PSAP Data Systems (CAD, etc.)

See a complete discussion of the ADSI CAD system shared by the DPD and DFD PSAPs under this heading in the previous section dealing with the Dayton Police PSAP.

PSAP E911 Telephony:

The DFD PSAP is equipped with a 5 workstation Positron Power 911 call taking system acquired in 1998. These terminals are the same as those shown for the DPD PSAP. The DFD PSAP is served by 6 trunks carrying 911 calls as well as a number of 7 digit line terminations. This equipment is nearing its expected life expectancy and is not compliant with the current requirements for wireless E911 Phase 2 call receipt and GIS plotting or VoIP connectivity.

PSAP Activity and workload data:

With the earlier "counting widgets" caveat in mind, this PSAP's annual cost/activity data is:

# 7-digit calls	# 911 calls *	# Events Dispatched	Population served	# Full time equivalent (FTE) PSAP staff	Annual PSAP operating cost
60,048	30,389	37,646	166,179	19	$1,238,200/ $1,445,672

Notes on the above:

- 7-digit calls: The DFD PSAP answers all DFD 7-digit calls where the caller dials "333-FIRE" (30,021 in 2005), which they should not be dialing for fire department administrative purposes.

[26] *The historical logic behind this configuration flows from the fact that about 85% of all 911 calls are generally related to law enforcement matter, with 15% related to fire and EMS responders. Therefore, the logic that was used was that since the bulk of 911 calls are for the cops, have the cops answer them. However, a criticism of this logic can be heard from fire and EMS responders who say, "Yes, maybe 85% of all calls to 911 are for the cops, but very few police 911 calls are true emergencies, whereas nearly 100% of all of the fire and EMS calls are true emergencies." Using this variation on this logic, one sometimes hears calls for the primary PSAP in a jurisdiction where there are separate police and fire PSAPs to be the FIRE PSAP and not the law enforcement PSAP. However, we are not aware of anywhere where this is the current practice.*

(There are other admin numbers that ring into the fire department HQ and the various fire stations.) The PSAP also answers a number of other 7 digit and automatic "ring-down" lines from places like the Airport and local hospitals (33,028 calls during 2005).

- #911 calls: Data from the E911 call tracking equipment represents the number of 911 calls answered. They could be call-backs from an earlier incident, they could be multiple calls on the same incident like a house fire, and they are all calls that have been transferred to the DFD secondary PSAP from some other primary PSAP, in most cases the DPS PSAP, but in some cases the MCSO or other PSAPs. Importantly, all 30,389 calls to 911 at the DFD PSAP are included in the call counts of the other primary PSAPs already. This means that if a system of "universal call takers" were employed, whereby calls would not have to be transferred elsewhere to be processed for fire or EMS dispatching, these 30,389 calls would "go away".

- # Events dispatched: The number of times in the year when a dispatcher told a field responder to go someplace and do something and for which a tracking record was created like "a tic mark being made" to keep track of how many times it was done during a year.

- **Population served**: As reported by the U.S. Census Bureau. *Does not include the populations of Riverside and Trotwood as they are counted in the MCSO population base since their 911 calls are initially answered at the MCSO PSAP.*

- Annual operating cost: As reported by the DFD in our survey. It should be noted, however, that the total operating budget for this PSAP (over and above the $1.2 million) also includes many items likely not captured (or able to be captured) in other agency's budgets, such as custodial staff, tech support costs, etc. For example, there are $730,533 in total costs reported by the DFD and the DPD not attributable to working staff and some of which are shareable between the two agencies who share the same stand-along facility. Since the DFD has 28.4% of the total staff complement (19) of the 67 deployed to both departments, we will allocate 28.4% of this $730,533 ($207,472) to the DFD budget bringing the total to $1,445,672. Spread out over the 166,179 population, this figures out to an annual per capita cost of $8.70, **for fire and EMS dispatch only.**

PSAP Staffing and deployment practices:

The DFD PSAP is funded for 15 full time fire/EMS civilian dispatchers, three Fire Lieutenants (Shift Supervisors) and one Fire Captain. This level of "FTE" provides adequate staffing to deploy an average of just over three working dispatchers per shift, and just under one commissioned officer as Shift Supervisor per shift.

SUMMARY CITY OF DAYTON OVERALL STAFFING AND COSTS:

* Total FTE involved in 911 dispatching: 67

Ratio of staff to service population: 1:2,480

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* Police 911 call taking and dispatching: $3,697,661
* Fire and EMS dispatching: $1,445,672

TOTAL: *$5,143,333 per year*

Annualized per capita cost based on 166,179 population is: $30.95

By way of comparison, we have examined the staffing levels of a number of other medium sized cities in the U.S. and have developed the following comparisons.

PSAP	# of FTE Staff	Service Pop.	Ratio of staff to pop.
Atlanta PD (Current)	152	423,019	1: 2,783
Fulton Co. GA ECC (Current)	86	232,000	1: 2,698
Atlanta PD + FD (Post city merge)	180	423,019	1: 2,350
San Diego CA PD	140	1,230,000	1: 8,785
Sedgwick Co. KS ECC (Wichita)	65	450,000	1: 6,923
Oakland County MI Sheriff	41	275,000	1: 6,707
Columbus, Ohio PD	118	632,910	1: 5,364
Detroit, MI PD	190	995,000	1: 5,236
Portland OR ECC	127	670,000	1: 5,276
Fresno CA PD	83	427,652	1: 5,152
Kansas City, MO PD	91	428,000	1: 4,703
Pittsburgh, PA ECC (pre merger)	72	334,563	1: 4,647
Oakland CA PD	89	400,000	1: 4,494
Minneapolis, MN ECC	85	382,000	1: 4,494
Sarasota Co. FL ECC	110	465,000	1: 4,227
Long Beach CA PD & FD	93	461,000	1: 4,057
Mesa, AZ PD (Metro Phoenix)	125	475,000	1: 3,800
Proposed Fulton-Atlanta PSAP	175	655,019	1: 3,742
Metro Nashville ECC	183	600,000	1: 3,279

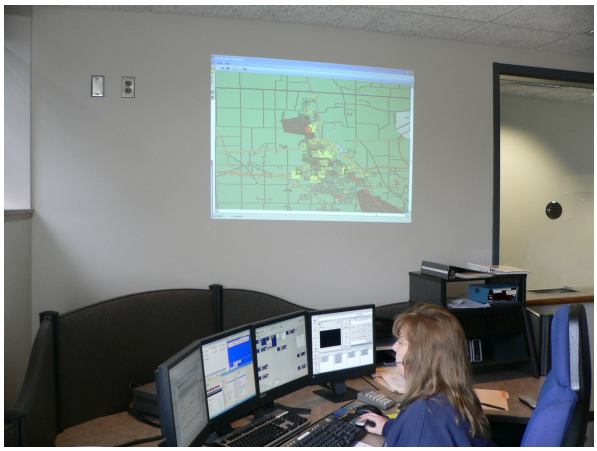
5. Englewood Police Department

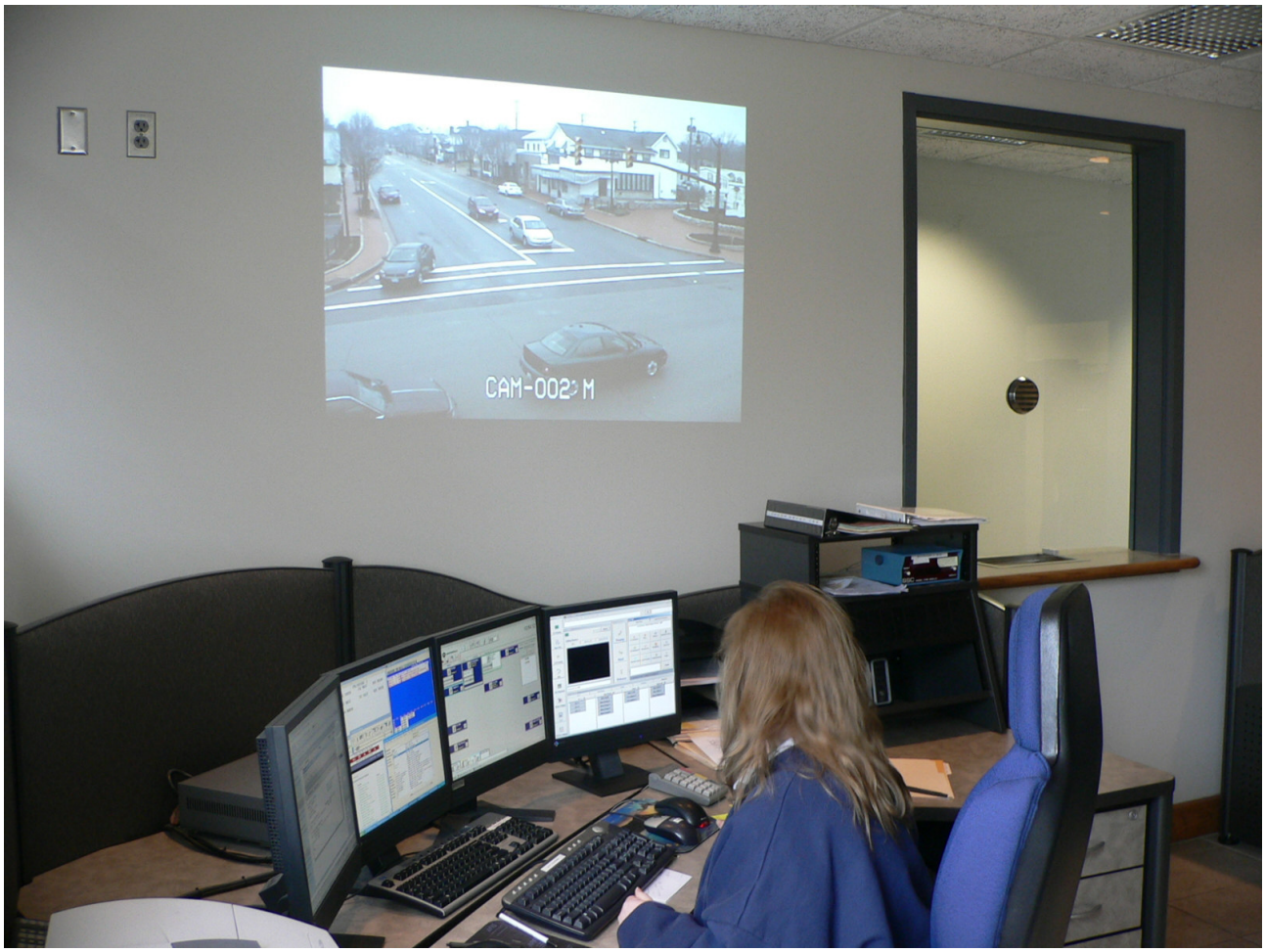
PSAP Location: 333 W. National Rd., Englewood
911 call taker & radio dispatcher workstations: 2

Current PSAP Inventory and Review

The City of Englewood Police PSAP is the primary dispatch center for all law enforcement, fire and EMS operations for the City of Englewood as well as the Union Police and Fire departments and the Butler Township fire service. This facility is a nearly new and very well equipped PSAP with a two position Plant Equipment VESTA 911 system and a two position Motorola CentraCom Gold Elite PC based radio console system that control twelve radio channels. It is located within the Englewood municipal facility in downtown Englewood. The radio portion of the console system provides the dispatcher interface to the radio channels (and associated base and repeater stations) used by the PSAP staff for emergency and administrative communications with field units from the Englewood Police and Fire Departments and other agencies. This console system is adequate, and is in fine condition.

The PSAP overview photos are below: with the left photo showing the left of the two dispatch positions and the right photo showing the right position, right next to it. Note the clean, uncluttered appearance, and the GIS map being projected on the wall above the left dispatcher. Via this same ceiling mount projector system, the PSAP is also able to project camera images from a number of CCTV cameras placed throughout the community. A photo showing this capability is on the next page. Note in that photo (as well as the left one below) the prominence of the "ticket taker" type of transaction window. These are commonplace in smaller PSAPs, and they are emblematic of the central role dispatchers in these agencies play in providing a 24 hour a day lobby access to the public and walk-in traffic.





PSAP Activity and workload data:

# 7-digit calls	# 911 calls *	# Events Dispatched	Population served	# Full time equivalent (FTE) PSAP staff	Annual PSAP operating cost
68,400	13,379	36,126	30,937	8.5	$506,438

PSAP Staffing and deployment practices:

The Englewood PD PSAP is funded for 5 full time and 7 part-time civilian dispatchers/911operators. Assuming about 1 "deployable" full time equivalency for the part time staff, this total of 8.5 "FTE" provides adequate staffing to deploy an average of just under two dispatchers per shift.

The Englewood PSAP is all civilian and is enrolled in the Ohio Public Employees pension system.

PSAP Expenditure/cost data:

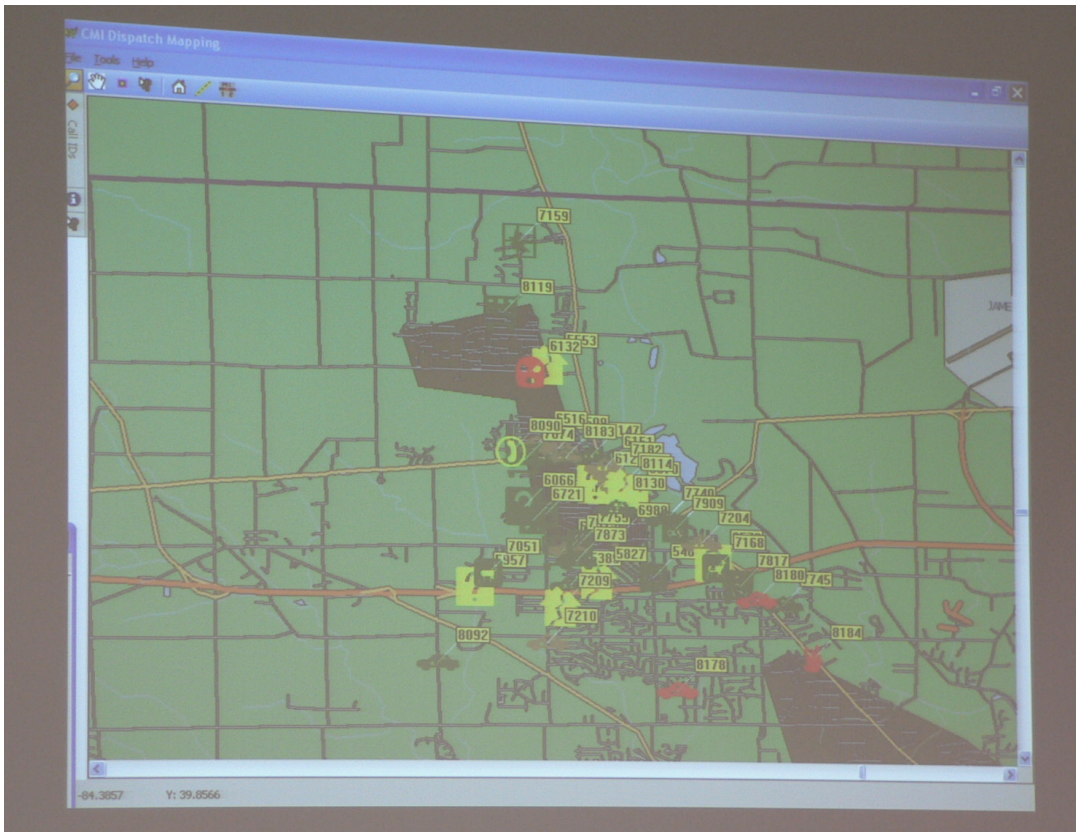
With 5 FT and 7 PT dispatchers, the Englewood P.D. reported an annual cost to operate their PSAP of $506,438 which results in a per capita cost for this service of $16.37. The reported breakdown of this total PSAP cost is:

- Total: $506,438
  - Personnel portion: $457,348 (90.3%)
  - Equipment portion: $ 9,842 (1.9%)
  - "Other" portion: $ 38,249 (7.55%)

PSAP Data Systems (CAD, etc.)

The Englewood P.D. PSAP uses a CAD and RMS system provided by Creative Microsystems, Inc of Englewood to support their workload, and they do use Mobile Data Computers (MDCs) that operate through the County Sheriff's data radio system and are interfaced to the Englewood CAD system. These appear to be very competent technologies as deployed in the Englewood system.

Depicted below is the "dispatch mapping" screen projected on the wall of the PSAP showing the location of a number of recent CAD events (yellow boxes with numbers in them representing the "event serial number" for that event). Also shown are some red icons, which are the locations of police vehicles, as entered by the dispatcher in the CAD system. Not yet deployed is a technology known as "AVL" (Automatic Vehicle Location) via which the location of a mobile unit would be instantly and constantly communicated to the PSAP, and could be updated on this map.



Two way radio environment @ Englewood PSAP:

Except for the Union Fire Department, all the agencies dispatched by this PSAP are subscribed to the MCSO 800 MHz trunked radio system. The Union F.D. is exploring migrating to the 800 MHz system by the end of 2006.

Contract Dispatch Services provided by Englewood:

Until very recently, the Englewood PD also provided contract dispatch services to the Clayton police and fire departments. However, when Clayton received a quote for these services from the Montgomery County Sheriff that was well below the fee charged by Englewood, Clayton decided to move these services to the MCSO PSAP. This has been a very controversial issue with the management of the Englewood PSAP, and significant concerns have been raised about the issue of how the Sheriff's Office arrives at the "per call" fee that they are charging Clayton, which results in the significant savings for Clayton. Englewood would argue that the County's stated fee is not an accurate representation of the total cost of providing the services to Clayton, since other County residents are "subsidizing" (Englewood's words) the Sheriff's Office.

6. Germantown Police Department

PSAP Location: 75 North Walnut Street, Germantown
Radio dispatcher workstations: 1
PSAP call taking workstations: 1

Current PSAP Inventory and Review

The Germantown Police Department PSAP is the primary dispatch center for law enforcement and fire operations within the Village of Germantown

The single on duty 911 dispatcher also serves as the department's phone operator and front window receptionist. Shown below is the customer service window (left) in the city hall lobby through which the dispatcher can deal with visitors:

The dispatch center itself (what is behind the above window) is shown on the next page:

This PSAP uses a single CalTech VEGA radio control console (just like the one in Brookville) to access the radio systems in use in the police and fire departments. The radio console is configured to access eight radio channels including the "I-PSAP" talkgroup on the County's trunked 800 MHz radio system.

There is one Positron "LifeLine 100" 911 call taker position in the above dispatch area (below the far right screen) that apparently dates back to the original implementation of E911 in the County. This version is now obsolete and would need significant upgrades to become wireless E911 and VoIP compliant. Two 911 trunks are answered via this workstation (right) and its associated Nortel telephone instrument (left), as shown below:

FCC Radio License Inventory and Review

All radio systems owners and operators are required to have valid FCC licenses for the operation of radio system equipment. The Germantown Village, Police and Fire and Rescue Squad hold FCC five licenses on thirteen 150 MHz (VHF) radio channels. **IMPORTANTLY**, however, none of the licensed radio frequencies has been re-licensed in accordance with the FCC's "Narrow Band" ruling, and this must be done by 2013, not to mention the potential expense of replacing base and field radio equipment that may not (or may) be "narrow band capable".

With the exception of having at "I-PSAP" RF control station to access that talkgroup on the County's 800 MHz trunked radio system, Germantown is not subscribed to that system.

PSAP Activity and workload data

With the earlier "counting widgets" caveat in mind, this PSAP's annual cost/activity data is:

# 7-digit calls	# 911 calls	# Events Dispatched	Population served	# Full time equivalent (FTE) PSAP staff	Annual PSAP operating cost
25,402	3,150	14,353	4,884	5.0	$180,000

Notes on the above:

- 7-digit calls: The GPD PSAP answers all GPD administrative and other seven digit lines 24/7. These 25,402 seven digit calls, spread across 365 days per year amount to 69.59 per 24 hour day, or an average of just under 3 per hour, if they occurred evenly spread across the 8 hour day, which they certainly do not. .

- **#911 calls:** Data from the E911 call tracking equipment represent the number of calls answered. They could be call-backs from an earlier incident, they could be multiple calls on the same incident like a house fire, and they could be calls that were transferred to the GPD PSAP from some other PSAP, such as the MCSO PSAP where a wireless 911 call may have been initially answered. This call volume translates into an average of 8.63 calls to 911 per 24 hour day, or about one 911 call every three hours, on average.

- **# Events dispatched**: The number of times in the year when a dispatcher told a police or fire field responder to go someplace and do something and for which a tracking record was created like "a tic mark being made" to keep track of how many times it was done during a year.

- **Annual operating cost**: As reported by the GPD in our survey. This figure is apparently offered (in their survey response) as an approximate figure for employing the five FTE dispatchers necessary to operate the PSAP for 168 hours per week. **However, we are somewhat skeptical of this number.** Specifically, the GPD survey response said $120,000 of this $180,000 was for "personnel costs". If this is true, there are 8,768 hours in the year, and if one multiplies this 8,768 hours times the mid range of the reported hourly wages for dispatchers ($10.69/hr. start to 14.02/hour top = mid range of $12.36), the result is $108,373. Simply adding the required employer's share of FICA and Medicare of 7.15% to this we end up with a total of $116,122, which would leave less than $4,000 left over for all the employer costs of state pension and health insurance.

PSAP Data Systems (CAD, etc.)

The Germantown PD PSAP operates using the same Creative Microsystems, Inc. (CMI) CAD system as used by Englewood P.D. with one workstation. It is also interfaced via the County's 800 MHz system to MDCs in patrol units.

PSAP Staffing and deployment practices

The Germantown PD PSAP reports having four full time and two part time civilian dispatchers. Assuming each of the part-time staff work about 50%, this works out to a full time equivalency of about 5.0., just enough staff to cover one dispatch position 24/7.

PSAP Expenditure/cost data

The Germantown PD PSAP reports a total annual expenditure of $180,000, which is broken down as follows:

- $ 120,000 for personnel (67%)
- $ 50,000 for equipment (28%)
- $ 10,000 fir "other" costs (5%)

EMD in Germantown:

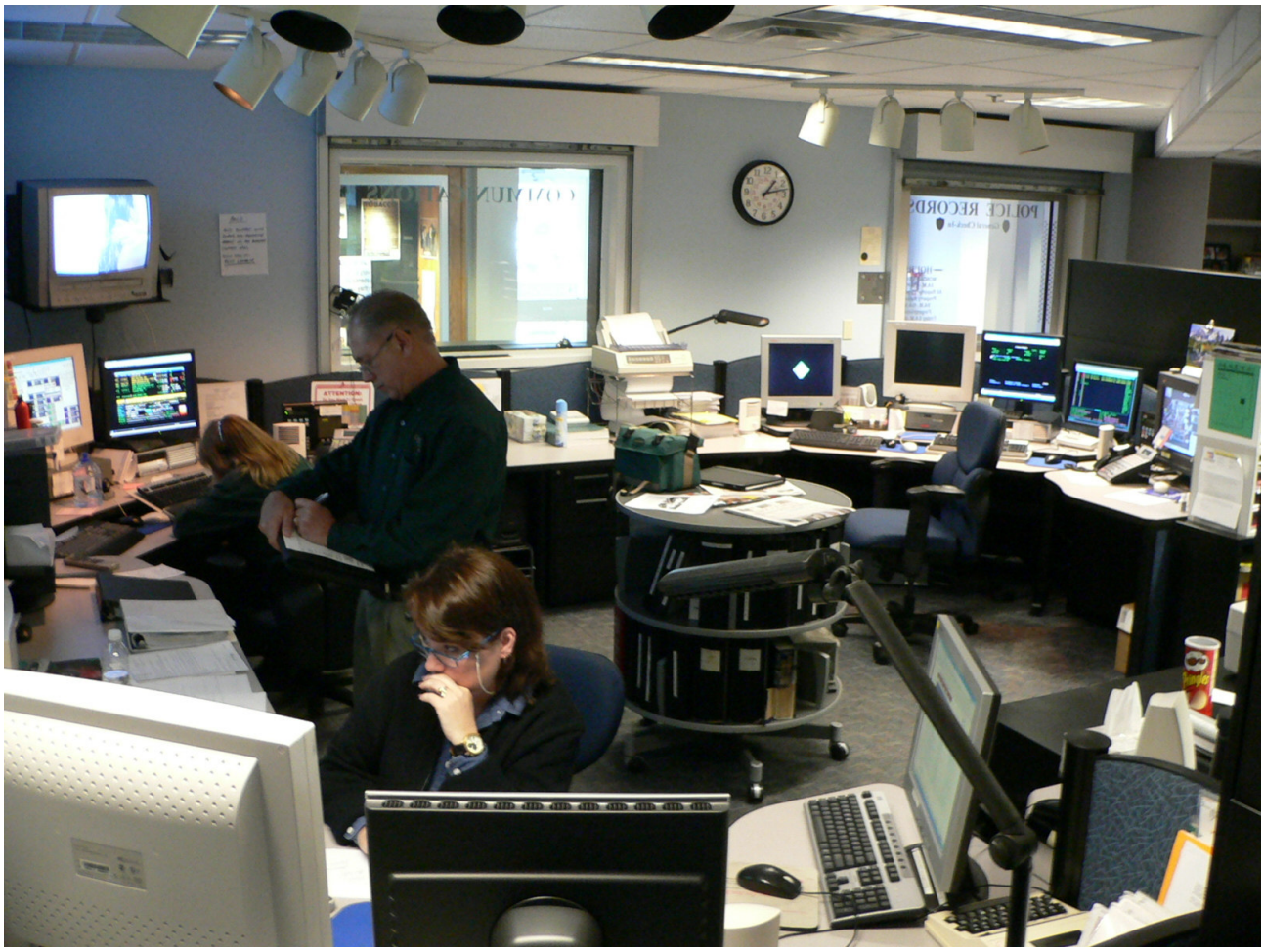
The GPD PSAP does provide EMD services via the Powerphone protocols.

7. Huber Heights Police Department

PSAP Location: 6121 Taylorsville Rd, Huber Heights
911 call taker & Radio dispatcher workstations: 3

Current PSAP Inventory and Review

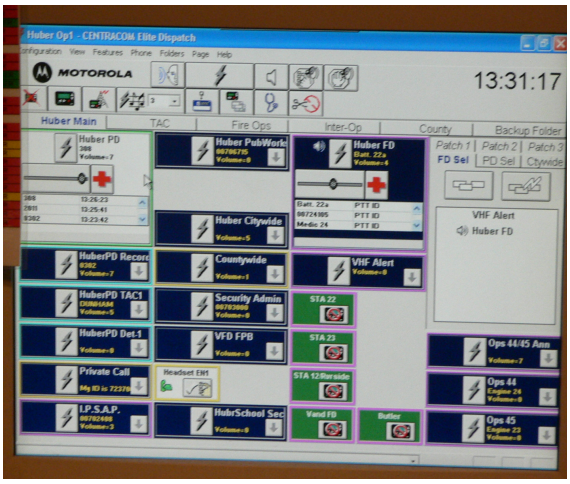
The Huber Heights Police Department PSAP is the primary dispatch center for Huber Heights Police and Fire departments. The facility is modern, very well equipped and busy. It is shaped somewhat circular, as can be seen in the picture below:

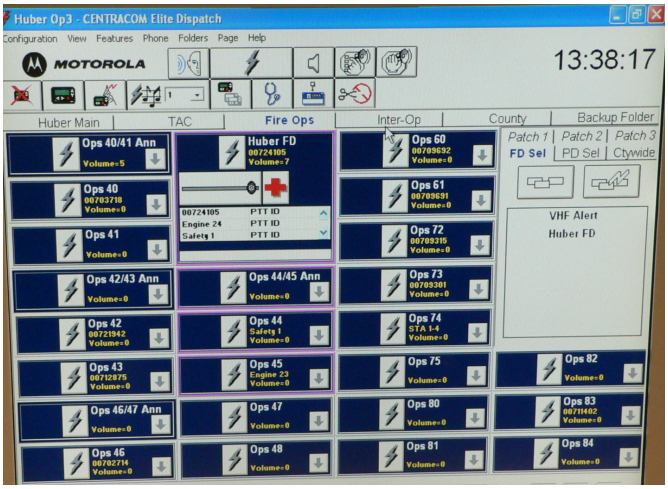


In the above, note that the 3rd operator position (closest to the window on the right) is not staffed at this time. Note also the adjacency of both the "COMMUNICATIONS" public service window on the left as well as the POLICE RECORDS service window on the right.

This PSAP is equipped with three Motorola CentraCom Gold Elite PC based radio consoles via which they control their talk groups (like radio channels) on the Montgomery County 800 MHz trunked radio system, as well as some legacy conventional VHF radio channels. The radio

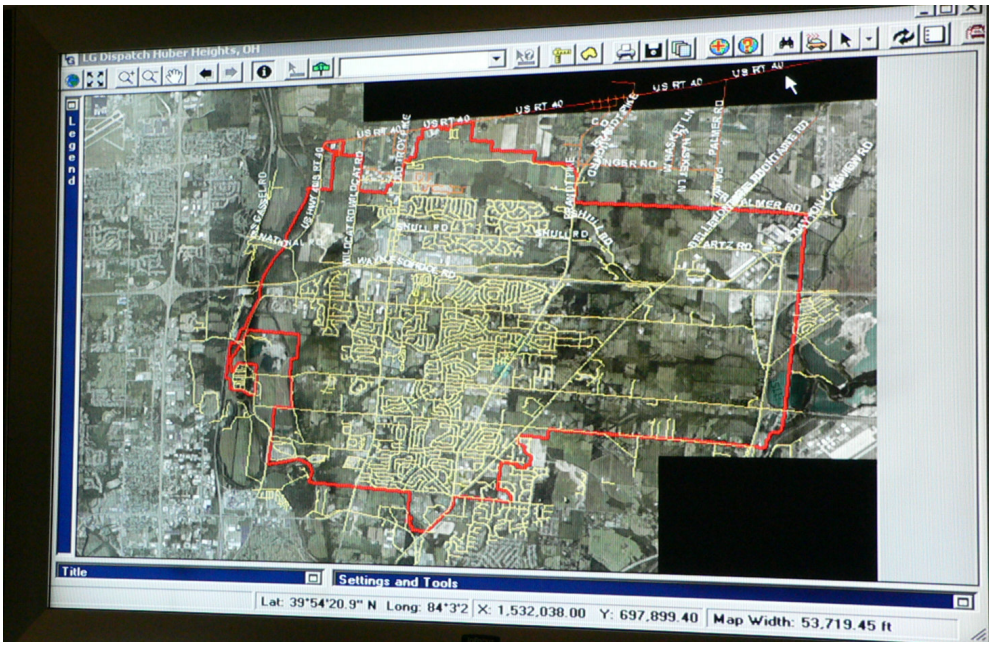
dispatch consoles are used by the Huber Heights Police PSAP staff for emergency and administrative communications with field units from the Huber Heights Police and fire departments as well as other agencies. A picture of several of the work screens (several are available) on the dispatch area are shown below.

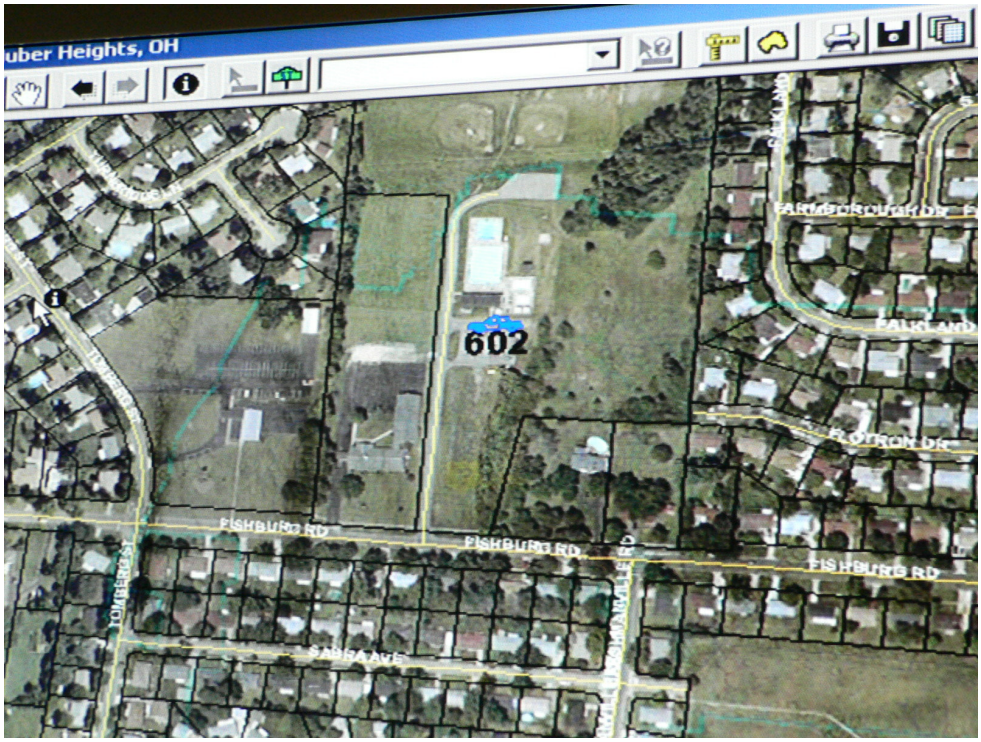




The overall configuration of the dispatch workstations merits some further explanation: In the photo below, "1" is the State of OH NCIC terminal, 2 is the Motorola Gold Elite Console, 3 is the two screens of the CAD system, (unit status and interactive), 4 is the facility security and camera control system, and 5 (below the number) is the Positron LifeLine 100 E911 phone. This position does not have direct viewing access for the mapping/video display shown in the next picture.

Below: A large LCD monitor on to which the GIS map of the community can be displayed between the two primary workstations. On this same display, the results of the AVL system and CAD plotting of incidents and 911 caller locations can also be displayed. (See photo below)





Above: A zoom in of the GIS map of Huber Heights, superimposed over a digital orthoquad aerial photo of the same area, with the blue icon showing the AVL location of police unit #602. The above technology is as good as we have seen in any similarly sized or larger PSAP.

PSAP E911 Telephony:

The Huber Heights Police PSAP is equipped as a **Primary PSAP** for the initial answering of all calls dialed to 911 from within the City of Huber Heights. For this purpose it is equipped with three Positron LifeLine 100 E911 call taker positions, served by four inbound E911 trunks. This version of equipment is no longer state-of-the-art, and has been in the market since the late 1980's. It is generally being replaced by CRT based call taking positions on which all 911 and 7 digit lines are integrated, along with call recording, TDD capabilities and ANI/ALI data display. The Positron equipment is shown below with the accompanying telephone set

Like we saw in Centerville, the Huber Heights PSAP staff also plays a very active role in the monitoring of prisoner processing and security door control and opening.

PSAP Activity and workload data

With the earlier "counting widgets" caveat in mind, this PSAP's annual cost/activity data is:

# 7-digit calls	# 911 calls	# Events Dispatched	Population served	# Full time equivalent (FTE) PSAP staff	Annual PSAP operating cost
58,040	5,164	61,192	38,212	11.5	$819,926

Notes on the above:

- 7-digit calls: The HHPD PSAP answers many administrative and other 7-digit lines 24/7. These 58,000+ seven digit calls, spread across 365 days per year amount to 159 per 24 hour day, or an average of 6.6 per hour, if they occurred evenly spread across a day, which they are certainly not.

- **#911 calls:** Data from call tracking equipment represent the number of calls answered. They could be call-backs from an earlier incident; they could be multiple calls on the same incident like a house fire. Spread across the year, this number averages out to just over 14 calls to 911 per day.

- **# Events dispatched**: The number of times in the year when a dispatcher told a police or fire field responder to go someplace and do something and for which a tracking record was created like "a tic mark being made" to keep track of how many times it was done during a year.

- **Annual operating cost**: The Huber Heights PD reported their annual PSAP operating cost at $819,926. This figures out to a per capita cost of $21.46 when spread across their 38,212 population.

PSAP Data Systems (CAD, etc.)

The Huber Heights PD PSAP operates the Sungard HTE CAD 400 CAD system, which operates on the City's IBM AS-400 platform. It has three workstations, and it serves MDCs that are interfaced to it in field units. The MDCs access the CAD system via subscribed access to the Cingular commercial GPRS network.

PSAP Staffing and deployment practices

The Huber Heights PD PSAP reports having eleven full time and one part time civilian dispatcher positions. This level of staffing permits having somewhat more than 2 persons (on average) assigned to dispatching (but available for other records related duties in the room) on duty at a time.

EMD in Huber Heights:

EMD services are provided by the Huber Heights PSAP using (formerly) Powerphone's protocols, and switching (soon, if not already) to the Priority Dispatch™ protocols.

Two way radio environment in Huber Heights:

The HH PD and HH FD are both full subscribers to the MCSO 800 MHz trunked radio system. As such the PSAP uses this system for day to day communications with all units. .

8. Kettering Police Department

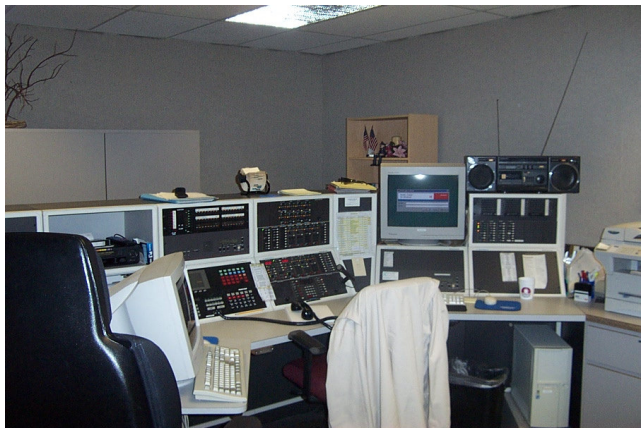
PSAP Location: 3600 Shroyer Road, Kettering
Radio dispatcher workstations: 3
PSAP 911 call taking workstations: 4

Current PSAP Inventory and Review

The KPD PSAP serves as the primary PSAP for all wired 911 calls dialed within Kettering. If it receives a fire or EMS call, that call is transferred to the Kettering Fire secondary PSAP several blocks away in a fire station. We were also advised of plans to bring the Kettering fire dispatch function into the Kettering Police dispatch center sometime in the not too distant future, but it was not made clear whether this would mean just a "co-location" of the two now-separate functions, or a merging of the two functions into one, as is the case in most PSAPs this size where the same dispatch staff receive, process and dispatch calls for both police and fire.

The overall KPD dispatch center is pictured below showing the two fully equipped main and usually staffed dispatch positions. Also shown from the rear are the two additional positions.

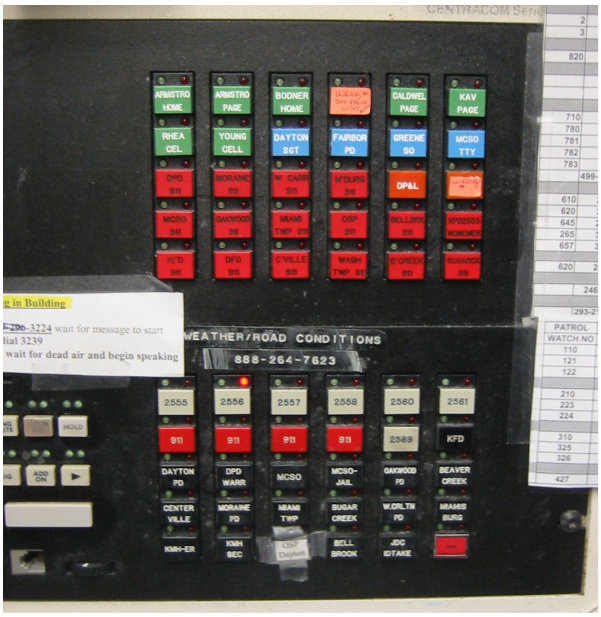
Below: The two added dispatch positions, with the one on the left being fully equipped with radio, CAD and E911 equipment, and the one on the left only having E911 and CAD, but no radio access



We were advised that plans are currently underway to migrate the Kettering police radio operation from their current VHF conventional radio system over to the County's 800 MHz trunked radio system, as well as to replace the nearing-obsolescence Motorola CentraCom Series II radio control consoles with new Motorola CentraCom Gold Elite PC based consoles.

PSAP E911 Telephony:

The KPD PSAP is equipped as a **Primary PSAP** for the initial answering of all calls dialed to 911 from within the City of Kettering. For this purpose it is equipped with 4 Positron LifeLine 100 E911 workstations installed in 2003, served by four inbound E911 trunks. One of these units is shown below. The top set of 30 buttons represent locations to which calls that have been answered can be transferred via "1 button" transfers, and the bottom set of 30 buttons are the inbound line terminations (four 911 trunks and seven 7-digit lines, plus several "ring down" circuits to/from other public safety agencies). On the right is an E911 ALI display for a 911 call from the Centrex phone system at the local school district. **Note: The room/bldg. of the 911 call isn't displayed. This is a major problem with most "multi-line" phone systems in schools and other large campus environments.**



PSAP Activity and workload data

With the earlier "counting widgets" caveat in mind, this PSAP's annual cost/activity data is:

# 7-digit calls	# 911 calls	# Events Dispatched	Population served	# Full time equivalent (FTE) PSAP staff	Annual PSAP operating cost
82,000	14,277	72,737	57,502	9.5	$686,842

Notes on the above:

- 7-digit calls: The KPD PSAP answers all KPD administrative and other 7-digit lines 24/7. These estimated 82,000 seven digit calls, spread across 365 days per year amount to 225 per 24 hour day, or an average of 9.4 per hour.

- **#911 calls:** Data from call tracking equipment represent the actual number of 911 calls answered. 14,277 calls spread across the 365 days of the year amount to an average of 39 calls to 911 per day, or 1.63 per hour. These could be call-backs from an earlier incident, they could be multiple calls on the same incident like a house fire, and they could be calls that were transferred to the KPD PSAP from any other PSAP, as required, such as wireless 911 calls being transferred here by the MCSO PSAP.

- **# Events dispatched**: The number of times in the year when a dispatcher told a police field responder to go someplace and do something and for which a tracking record was created like "a tic mark being made" to keep track of how many times it was done during the year.

- **Annual operating cost**: While the KPD reported that their PSAP costs at $686,842, the breakout for these costs was given as:

- Personnel costs: $631,314 (91.9%)
- Equipment: $ 55,528 (8.1%)
- "Other" None provided

This total cost of $686,842, when spread across the City's 57,502 population results in a per capita cost of $11.95 for 911 call taking and **POLICE dispatch** only. For the total "cost to the taxpayer" one must also add the Kettering Fire PSAP figures, which we will do in a few pages.

PSAP Data Systems (CAD, etc.)

The KPD PSAP operates using an integrated Cisco™ CAD and Records Management System (RMS) system with many workstations throughout the overall KPD facility. The KPD also operates MDCs in field units that are interfaced to the CAD portion of this system, but not the RMS portion. These MDCs operate over a subscribed commercial cellular "edge" edge technology system.

Kettering does not have AVL, and it does not have GIS mapping, which would be necessary for AVL as well as for plotting the location of CAD incidents and wired or (eventually) wireless E911 call locations.

PSAP Staffing and deployment practices

The KPD PSAP reports employing nine full time and one part time civilian dispatchers. Assuming the one part timer = ½ full time we are calling this complement equal to 9.5 FTE. This level of

staffing enables the KPD to deploy almost exactly an average of 2 dispatchers on duty at any one time.

CCTV monitoring role at the KPD PSAP:

As we have seen in several of the other Montgomery County PSAPs, the KPD dispatchers are tasked with a rather active role in the monitoring of CCTV cameras, both inside and outside the facility, as well as an active role in the control and activation of various security doors in the facility associated with prisoner movement. In the picture below one can see the number of CCTV monitors **(*)** that are present. The two to the lower left hand of the left side dispatcher are traffic control monitoring cameras on city streets, which can be controlled by the dispatcher (zoom, pan, tilt, select from several cameras), while the rest are internal facility cameras, with the lower picture showing a close up of the police facility monitor cameras.

9. Kettering Fire Department

PSAP Location: 4121 Shroyer Road, Kettering
Radio dispatcher workstations: 3
PSAP call taking workstations: 3

Current PSAP Inventory and Review

The Kettering Fire Department operates a secondary PSAP for the City of Kettering, to which 911 calls answered in the Kettering Police Primary PSAP are transferred for fire and EMS processing and dispatching. The facility is located on the 2nd floor of one of the City's fire stations a few blocks away from the Police PSAP on Shroyer Road. This facility is shown below, with the location of the PSAP within the building indicated by the red arrow.

The KFD PSAP is the dispatch center for fire and EMS operations within the City of Kettering, 24/7, and from this facility responses are generated from the City's 7 fire stations, including this one. The KFD is a full subscriber to the Montgomery County 800 MHz trunked radio system.

The actual space from which the KFD call taking and dispatching is done is shown on the next page, and while there are technically three workstations, the staffing level generally permits only one on duty at a time, and this is where that one dispatcher does their work:

The dizzying array of electronic equipment in the above picture is actually not much more complicated than what has been shown in earlier PSAPs. The main issue is the space in which it all had to be placed, and the fact that few of the elements are integrated via PC terminals, which is now regularly possible. The main components shown above are still the two CAD terminals (they operate off the County Sheriff's CAD system) in the center of the picture, the radio controls (over the dispatcher's left shoulder), the E911 telephone equipment (up and to the right of the dispatcher's head and off the dispatcher's right shoulder), the Zetron fire station alerting system (white rectangular box partially covered by the left CAD screen) and the regular paging system (the white keys with the one big red key just to the right of the dispatcher's left ear), and the regular 7 digit phone system (the white unit hanging vertically on the right).

PSAP E911 Telephony:

The KFD PSAP is equipped with a three Positron LifeLine 100 E911 call taking system fed by three E911 trunk lines as well as four 7-digit lines.

This Positron system is relatively obsolete and does not support GIS mapping interface or VoIP connectivity. .

PSAP Activity and workload data

With the earlier "counting widgets" caveat in mind, this PSAP's annual cost/activity data is:

# 7-digit calls	# 911 calls	# Events Dispatched	Population served	# Full time equivalent (FTE) PSAP staff	Annual PSAP operating cost
5,500	N/A	6,600	57,502	4	$327,640

Notes on the above:

- 7-digit calls: The KFD PSAP answers these 7-digit lines 24/7, but they are not the general "telephone operator" for the Kettering Fire Department administration. These 5,500 seven digit calls, spread across 365 days per year amount to about 15 per 24 hour day, or an average of 5/8th of one call per hour.

- **#911 calls:** The KFD did not provide this information. It should have been available from either equipment connected to their Positron equipment (if they have what is called "the MIS shelf") of from SBC in the form of data reflecting the number of ALI requests generated from their equipment during the year. Importantly, however, all of the 911 calls answered in the KFD PSAP were transferred here from some other PSAP, usually the Kettering PD PSAP or the Sheriff's PSAP (in the case of wireless 911 calls requesting fire or ambulance in Kettering). Therefore, all of these 911 calls should have been counted on some primary PSAPs 911 call count already. Furthermore, if we accept the premise that about 85% of all 911 calls are for police and 15% are for fire and EMS, then if we look at the total of all 911 calls answered at the Kettering PD (14,277) and take 15% of that total, we come up with 2,142 calls that may have been transferred to the KFD PSAP. (It would be interesting to see if this projection comes close to matching the KFD's actual numbers, if they could get them).

- **# Events dispatched**: The number of times in the year when a dispatcher told a fire or EMS field responder to go someplace and do something and for which a tracking record was created like "a tic mark being made" to keep track of how many times it was done during a year.

- **Annual operating cost**: While the KFD reported that their PSAP costs at $327,640, the breakout for these costs was given as:

- Personnel costs:	$264,840 (80.8%)
- Equipment:	$ 58,100 (17.7%)
- "Other"	$ 4,700 (1.4%)

This total cost of $327,640, when spread across the City's 57,502 population results in a per capita cost of $5.70 for **FIRE and EMS dispatch** only. For the total "cost to the taxpayer" one must also add the Kettering Fire PSAP figures, which we will do in a few pages.

PSAP Data Systems (CAD, etc.)

The KFD PSAP operates as subscribed users to the Montgomery County Sheriff's Tiburon™ CAD system. Tiburon has been a longtime provider (under some previous names as well, such as PSW3) of CAD systems to the public safety community. The primary reason why a fire department would operate on this CAD system is that it serves as the vehicle via which automatic mutual aid responses involving multiple fire departments dispatched by multiple entities are coordinated. It is also a very important element in the potential implementation of a "virtually consolidated" PSAP system in any set of communities.

Simply put, if one has several PSAPs accessing a common CAD system from several remote locations, the same several PSAPs accessing a common shared radio system from several remote locations, and the same several PSAPs all accessing a common shared E911 system from several remote locations, one has pretty much implemented a "***virtually*** consolidated PSAP". In such a scenario, everyone would operate as if they were in one big dispatch room, but they would still be in their respective "homes". And, while such an arrangement does not offer much in the way of cost reductions from a staffing or facility perspective, it does offer a significant degree of the operational coordination gains available from a mutual dispatch or consolidation of PSAPs system.

There will be a much fuller discussion of **Virtual PSAP Consolidation** later in the report.

EMD in Kettering:

EMD services are provided in Kettering by the fire PSAP using the Medical Priority Dispatch flip card system.

Summary data for the City of Kettering as a whole (police and fire PSAPs):

PSAP Activity and workload data

With the earlier "counting widgets" caveat in mind, this PSAP's annual cost/activity data is:

# 7-digit calls	# 911 calls	# Events Dispatched	Population served	# Full time equivalent (FTE) PSAP staff	Annual PSAP operating cost
87,500	14,277	79,337	57,502	15.5	$1,014,482

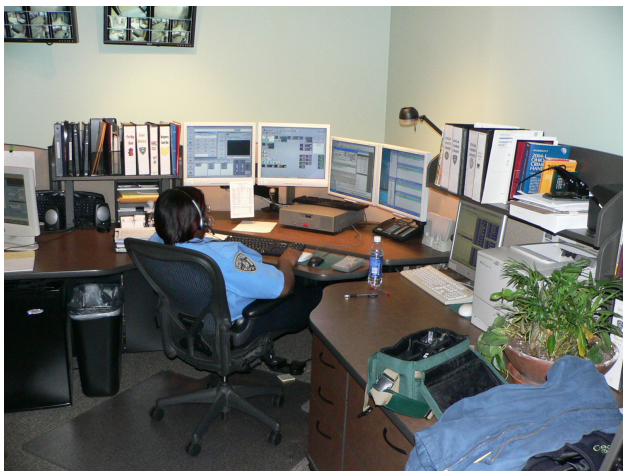
Spread across the City's 57,502 population, this total cost of $1,014,482 comes out to an annual per capita cost for all 911 and police/fire/EMS dispatching services of $25.19.

10. Miami Township Police Department

PSAP Location: 2660 Lyons Road, Miami Twsp.
PSAP call taking workstations: 3
CAD Workstations: 3

Current PSAP Inventory and Review

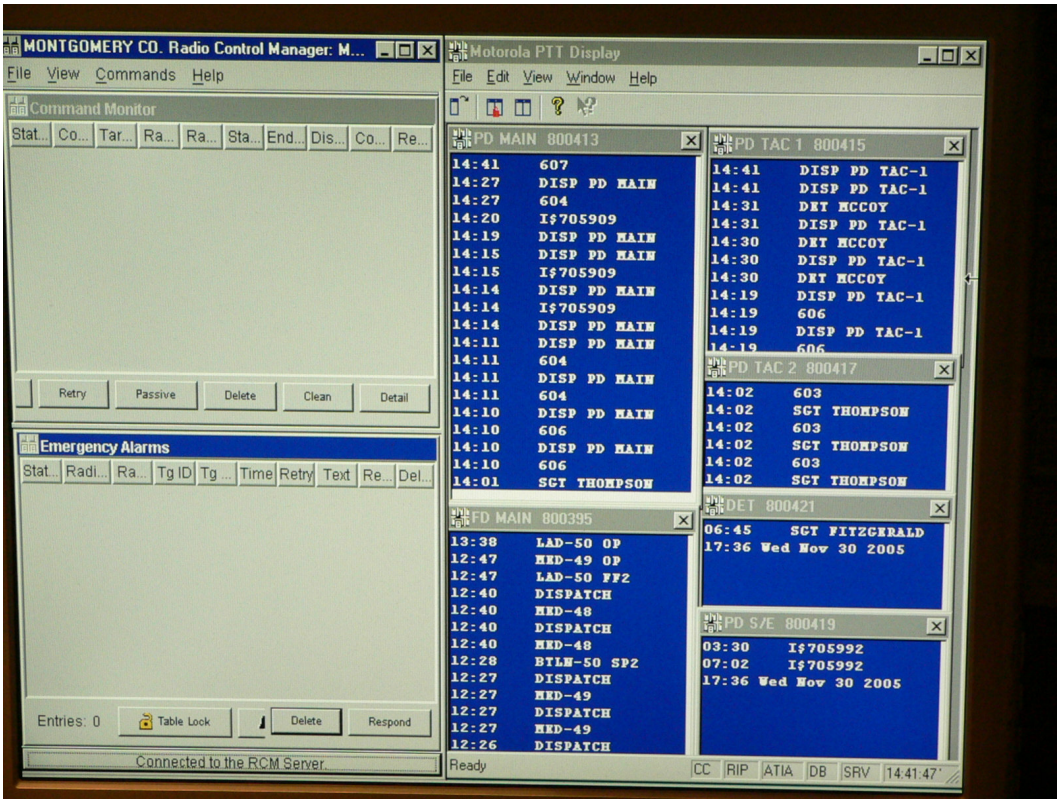
The MTPD PSAP is equipped with a 3-postion dispatch workstation system using the latest in CRT system integration technologies. The two main and usually staffed positions are shown below:



The array of five flat panel LCDs on an open and vertically adjustable writing surface has largely taken the place of the large metal furniture type console arrangements we saw in Dayton, Kettering PD and other PSAPs. Properly implemented, all these LCD screens can be one big wide Microsoft Window and one keyboard and one mouse can traverse the five and manage multiple concurrent software sessions at once.

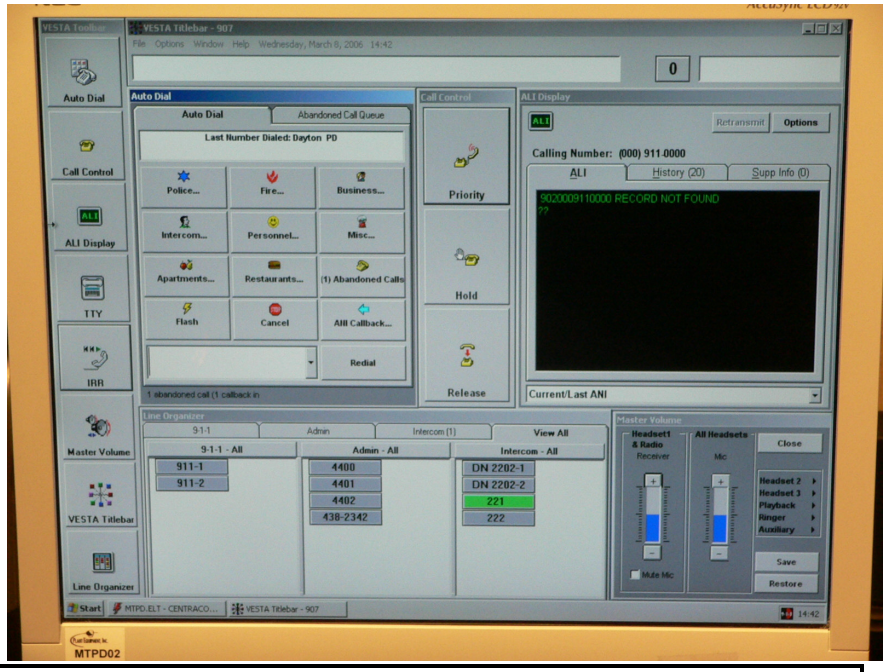
Two Way Radio in the MTPD PSAP:

Miami Twsp. police and fire units are fully subscribed to the County's 800 MHz trunked radio system, and the bulk of the radio resources controlled by the Motorola CentraCom Gold Elite PC based console are talkgroups on that radio system. This PSAP is also equipped with a special terminal which depicts status and activity on the trunked radio system as shown on the next page. On this screen, the left side is for command inputs to the main radio system controller, as well as where EMERGENCY alarms that have been activated on individual radios will display. On the right side is where a running history of which radio transmitted, in what order and on what talk group is listed. Note that on the talkgroup called "PD TAC 2" (middle right side) Sgt. Thompson's radio transmitted at 14:02 hours (2:02 p.m.) and the time is now 14:41 hours (2:41 p.m.)



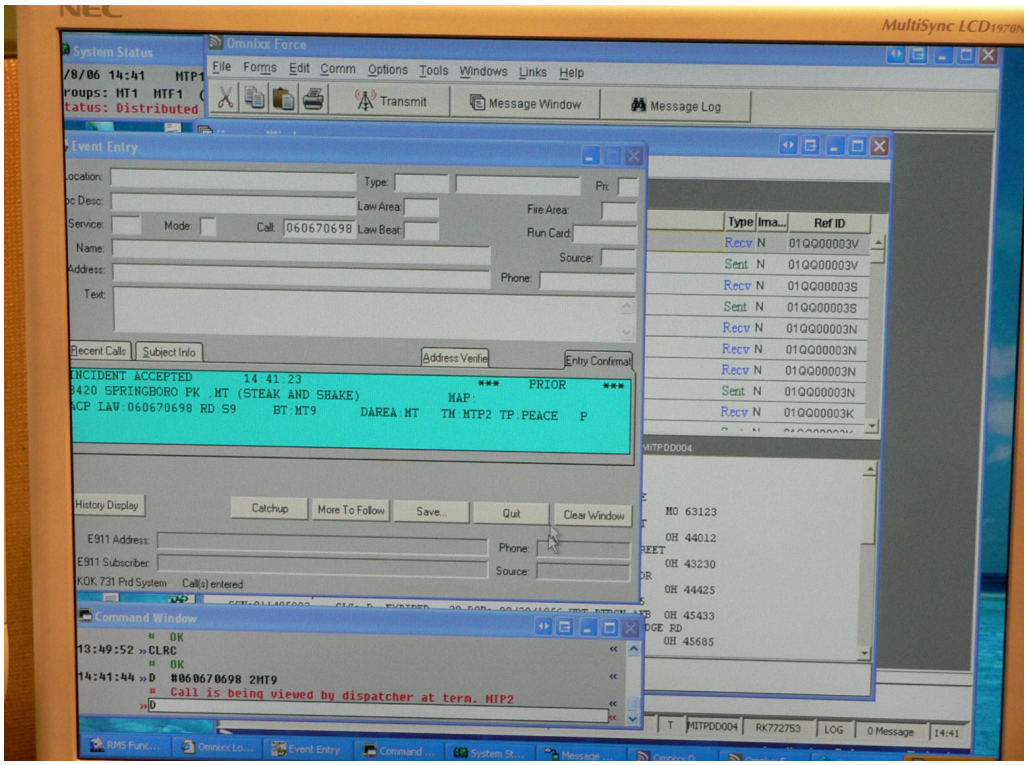
E911 PSAP telephony:

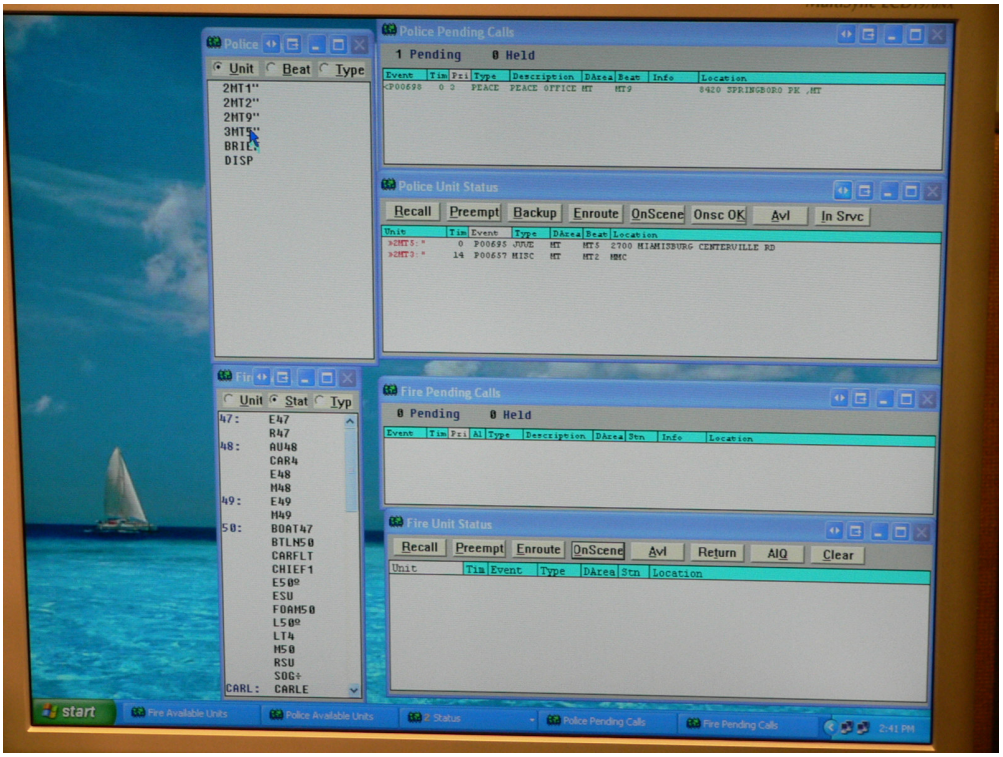
The MTPD is served by three Plant Equipment Vesta™ Pallas E911 workstations, each of which terminates the two E911 trunks feeding the MTPD PSAP as well as several 7 digit lines. This CRT based workstation is shown below. Note that the E911 ALI data appears in the black rectangular screen portion on the right center, and the lines eligible for answering appear in the three panels on the bottom center of the screen. This is likely the most widely used E911 equipment in the U.S..



CAD and date systems at the MTPD PSAP:

The MTPD PSAP is a subscribed user of the Sheriff's Tiburon CAD system for both police and fire dispatch purposes. Pictured below are an interactive CAD screen (top) and the unit and call status screen (bottom)





The field units are also served by MDCs that are interfaced with the CAD system and the State of OH, but not with the RMS system. These MDCs operate on a radio backbone provided by the Sheriff's Office. The PSAP does not currently have or support GIS mapping or AVL.

EMD in Miami Township: The MTPD PSAP does not currently offer EMD services.

PSAP Activity and workload data

With the earlier "counting widgets" caveat in mind, this PSAP's annual cost/activity data is:

# 7-digit calls	# 911 calls	# Events Dispatched	Population served	# Full time equivalent (FTE) PSAP staff	Annual PSAP operating cost
57,426	10,008	29,490	45,593	8	$459,959

Notes on the above:

- 7-digit calls: The MTPD PSAP answers some 7-digit lines 24/7, but they are not the general "telephone operator" for the Police Department offices during normal business hours. These 57,426 seven digit calls, spread across 365 days per year amount to about 157 per 24 hour day, or an average of 6.5 calls per hour.

- **#911 calls:** This data is provided from the Plant Equipment system and represents an average of 1.14 calls to 911 per hour of the year, or about 27 calls to 911 per day.

- **# Events dispatched**: The number of times in the year when a dispatcher told a police, fire or EMS field responder to go someplace and do something and for which a tracking record was created like "a tic mark being made" to keep track of how many times it was done during a year.

This annual cost of $459,959, when spread across the Township's 45,593 residents results in a per capita cost of $10.08 for the combination of 911 call taking, police, fire and EMS dispatch.

11. Miamisburg Police Department

PSAP Location: 10 North 1st Street, Miamisburg
Radio dispatcher workstations: 2
PSAP call taking workstations: 2

Current PSAP Inventory and Review

The MPD PSAP is the primary 911 PSAP for the City of Miamisburg and performs all radio dispatching for the city's police, fire and EMS services from their facility in the basement of the Civic Center in Miamisburg. A general view of the dispatch room in the basement (showing the two workstations) is below:

A more detailed view of one of the two dispatcher positions is shown below:

Key to photo: Far left screen is Motorola CentraCom Gold Elite PC based console which controls access to the County's 800 MHz trunked radio system (of which MPD and MFD are full users). Screen covered by dispatcher's head is for the Department's Cisco™ CAD system; Screen on the right on the writing surface is a multi-picture display from their CCTV system, as are the three TV screens mounted on the wall above the dispatcher. The Positron E911 ANI/ALI display and transfer unit is located right under the middle TV on the wall, and the laptop PC on the writing surface to the right of the dispatcher is for access to the State NCIC system.

E911 PSAP Telephony:

The MPD has two Positron LifeLine 100 workstations terminating two E911 trunks. The equipment is leased from SBC. This is a rather expensive way of having these devices, in that they are paid for on a monthly lease that is never paid off. More and more PSAPs now own their E911 equipment, and that is the practice at most of the Montgomery County PSAPs as well.

Two Way Radio in Miamisburg

The police and fire departments, as well as the PSAP, are fully subscribed to the County's 800 MHz trunked radio system.

CAD and related data systems:

The MPD PSAP operates on a locally owned and operated Cisco CAD system which operates on the City's 'main frame' computer system. They are not currently served by GIS mapping and, therefore, cannot currently support AVL and/or the plotting of CAD incidents, wired or wireless E911 caller locations. Their field police units do have MDCs in them, but they are not interfaced to the MPD's CAD system. Rather, they are only used for queries to and responses from the State's criminal justice data network.

PSAP Activity and workload data

With the earlier "counting widgets" caveat in mind, this PSAP's annual cost/activity data is:

# 7-digit calls	# 911 calls	# Events Dispatched	Population served	# Full time equivalent (FTE) PSAP staff	Annual PSAP operating cost
128,339	10,684	32,470	19,489	7	$438,296

Notes on the above:

- 7-digit calls: This number was drawn from a two week survey conducted by the MPD, and we are significantly skeptical about its accuracy. While the PSAP operators are the "general telephone operator for the police department", 24 hours per day, our experience tells us this number is **very high** for a community and department this size. Our experience has shown us that a ratio of 5 or 6 seven digit calls to every 911 call is about average, and if we were to take the MPD number of 911 calls (10,684) and multiply that by 6.5, we would arrive at 69,446 seven digit calls, just over half of the number being estimated by the MPD from their survey. By way of comparison, in Vandalia, with 14,603 residents, they report answering 30,108 seven digit calls (6.4 times as many 911 calls as they received) In West Carrollton, they reported 79,125 seven digit calls for their 13,818 population, or about 7 times the number of 911 calls they received.

- #911 calls: Data from Positron call tracking equipment represent the number of calls answered. These 10,684 calls to 911 work to a daily average of 29.27, and an hourly average of 1.22 calls per hour.

- # Events dispatched: The number of times in the year when a dispatcher told a field responder to go someplace and do something and for which a tracking record was created like "a tic mark being made" to keep track of how many times it was done during a year.

- Annual operating cost: As reported by the PSAP in our survey, and these costs were broken out as follows:

- Personnel: $401,502 (91.6%)
- Equipment: $ 33,893 (7.7%)
- "Other" $ 3,300 (0.75%)

Spreading this total annual cost of $438,296 across the population of 19,489 results in a per capita cost of $22.49.

PSAP Staffing and deployment practices:

The MPD reports employing seven full time persons in the role of dispatcher/911 operator, and that each full time employee is scheduled to work 2,080 hours per year. This level of staffing will support an average of about 1.5 persons on duty at any one time, 24 x 7.

EMD in Miamisburg:

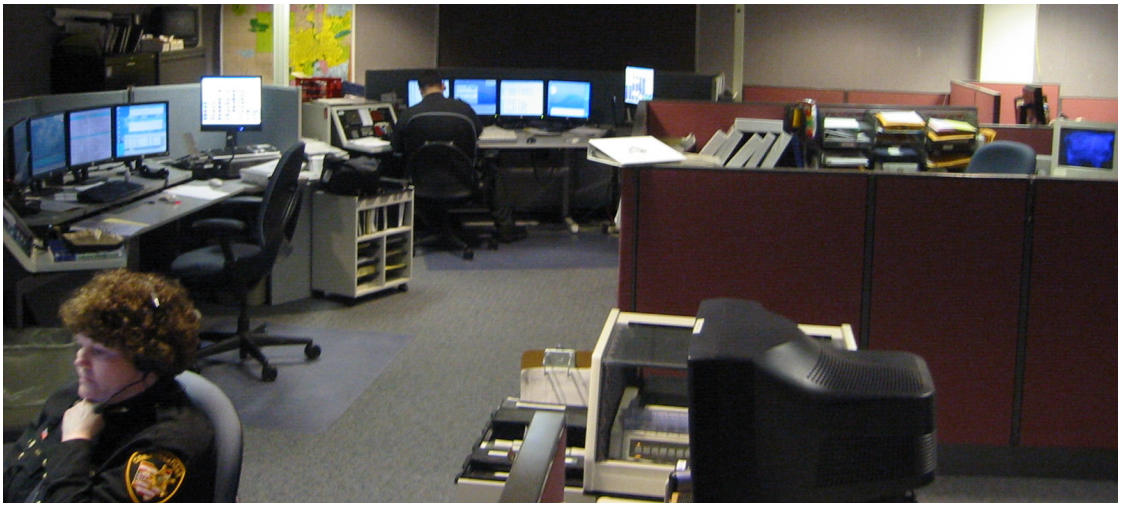
EMD services are provided by the MPD PSAP using the Powerphone™ protocols.

12. Montgomery County Sheriff's Office

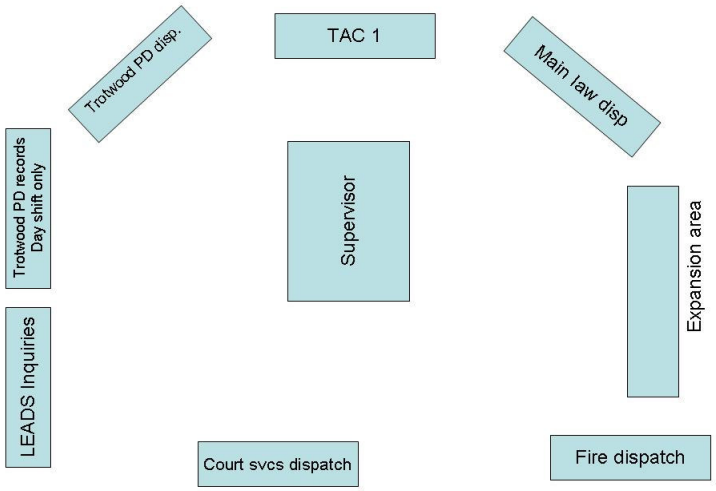
PSAP Location: 333 West 2nd Street, Dayton (Basement of County Jail)
PSAP call taking and radio dispatch workstations: 8
CAD Workstations: 8 in the PSAP, 11 overall

Current PSAP Inventory and Review

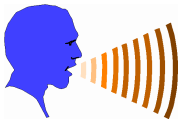
The Montgomery County Sheriff operates a large and well equipped PSAP in the basement of the County Jail facility in downtown Dayton. As best as can be accomplished in a large room, much of the PSAP is pictured below. For reference, the position in the center with the male dispatcher, back to the camera is the "Main Law Dispatch" position, as indicated on the diagram below.



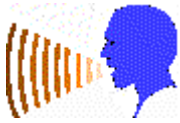
Montgomery County Sheriff's PSAP rough floor layout



The following descriptive information was captured from the Sheriff's Office's web site:



Dispatch Center



The *Communications Center* staff consists of civilian dispatchers combined with sworn Sergeants, who serve as supervisors. The Montgomery County Sheriff's Office dispatches police and/or fire calls for the following communities and departments:

- Montgomery County Sheriff's Office
- Jackson Township Police
- Harrison Township
- Jefferson Township
- Washington Township
- Butler Township Police
- Clay Township Police
- Five Rivers Metro Park Rangers
- Jefferson Township Fire
- Village of Phillipsburg Police
- City of Riverside Police
- City of Trotwood Police

CAD and related data issues:

The MCSO PSAP is served by the Sheriff's Tiburon CAD system referenced earlier, in which several of the municipalities and townships also participate. This is a very popular CAD system in the U.S. offering robust functionality for police, fire and EMS dispatch purposes. The Sheriff's Office also has a robust MDC system serving many laptops in vehicles, using a Motorola 800 MHz data RF backbone for countywide coverage. They are not currently served by GIS mapping, and can't plot CAD events, wired or wireless E911 caller locations on a map, and they do not support AVL.

E911 PSAP Telephony:

The MCSO PSAP is served by an eight position Positron "PHREND" E911 CPE system, which they have owned since 1988. It is nearing the point of obsolescence, and will need to be significantly upgraded or replaced to accommodate wireless E911 Phase 2 data as well as VoIP connectivity. The telephone instruments for this system are legendary in the industry for their size, as can be seen on the following page. The instrument shown terminates ten E911 trunks for wired and wireless E911 calls, but we would strongly suggest that any PSAP as involved with wireless 911 as this PSAP will be should have separate and dedicated trunks for wireless 911 calls. The rationale behind this recommendation is one of "equity", so to speak. In other words, it is entirely conceivable that numerous wireless 911 callers reporting something like a major accident on the

freeway could tie up all the inbound 911 trunks to the PSAP, thereby denying access to these trunks to wired 911 callers from elsewhere in the County. By using dedicated trunks, not only can one know at a glance the ratio of wired to wireless 911 calls, one can also segregate this traffic for congestion control purposes.

ABOVE: Positron PHREND IAP (Intelligent Answering Position) terminating ten 911 trunks (far left vertical row of red buttons), numerous 7 digit and "ring down" lines, and also featuring "one button transfer" buttons to numerous other PSAP's 911 and/or 7 digit lines. Also equipped with the E911 ANI display (LCD above the touch-tone keypad) and the E911 ALI display screen on the far right.

Two way radio at the MCSO PSAP and elsewhere

As referenced numerous times throughout this report, Montgomery County, through the Radio Communications Unit of the Sheriff's Office operates a large, very well designed and functional county-wide 800 MHz trunked radio system. The following information comes from the Sheriff's web site:

County Communications / 800 MHz Radio System Section

David M. (Mike) Wren – Radio Systems Administrator

Location Address	Mailing Address
2712 Springboro Pike	330 West Second St
Dayton, Ohio 45439	P.O. Box 972
wrenm@mcohio.org	Dayton, Ohio 45422

County Communications provides radio communication repair and programming services as well as installation and maintenance of automotive emergency lights, sirens, cameras, and other electronic related items. The section is staffed by a civilian supervisor and civilian technicians and provides services to all Montgomery County departments and several local agencies.

The 800MHz Radio System, administered by the Montgomery County Sheriff's Office, provides radio communications for numerous local Public Safety agencies and Public Service departments

Through the 800 MHz radio system, the *Communications Center* and patrol personnel from the above listed agencies can communicate with a number of other government agencies, including:

- City of Centerville Police
- City of Dayton Police
- City of Englewood
- City of Huber Heights Police
- City of Miamisburg Police
- City of Moraine Police
- City of Vandalia Police
- City of West Carrollton Police
- City of West Carrollton Fire
- Miami Township Police
- Warren County Sheriff's Office
- Greene County Sheriff's Office
- Miami County Sheriff's Office
- Montgomery County Juvenile Detention Center
- Montgomery County Animal Shelter
- Montgomery County Sanitary Department
- Montgomery County Health Department
- Montgomery County Engineer's Office
- Montgomery County Coroner/Crime Lab

The ability to communicate allows for better coordination between agencies when working together in various situations, particularly emergencies.

This 18 channel, six site simulcast system is of the type that most jurisdictions are trying to achieve. Its only significant shortcoming is the fact that it is analog and not digital in its modulation. With digital modulation, spectral efficiency can (eventually) be maximized and audio quality and clarity can be improved. The County system, while totally separate from the City of Dayton's system of similar design, is also interfaced to the City's system via the use of several shared "talkgroups" between the two systems.

Of major interest here is that this radio system represents a very large portion of the necessary infrastructure to facilitate a countywide radio dispatch system, be it out of one central PSAP facility or several regional PSAP facilities. Minimal modification would be required to this infrastructure in terms of providing added radio signal coverage, as it is already designed for countywide coverage, and only additional channel resources (over and above the current 18) would be needed to provide the required capacity to handle many more field radio units.

EMD at the MCSO PSAP: EMD Services are not offered by the MCSO PSAP.

Wireless 911 at the MCSO PSAP and in the County in general:

At the present time, the MSCO PSAP is apparently the nearly universal "default PSAP:" for all wireless calls dialed to 911 in the general County area. This is generally being done under what is unofficially referred to as "Phase 0" or "Phase .5" technology.

Specifically, under "Phase 0" systems, the wireless carrier (and this is all established on a carrier by carrier basis) sees that a subscriber has dialed 911 from their cell phone, and that said 911 call has been initially received by a cell tower in its network of towers in or very near someplace in Montgomery County. The wireless carriers' mobile switching office (MSO) checks a routing table that answers this question***: "What am I supposed to do with a call dialed to 911 that is being processed by a cell tower at the intersection of Springboro Pike and I-75 in Montgomery County?"*** The current answer (absent Phase 1 or Phase 2 implementation) is as follows, under Phase 0:

> *"Route this call to the 10 digit number 937-XXX-XXXX that is answered at the MCSO PSAP on a 7 digit line that may or may not be set aside for such 911 calls and over which the answering dispatcher may or may not say '911' when the call is answered"*

So, this call dialed to 911 arrives on a 7 digit line at the MCSO PSAP and contains no E911 attributes such as ANI or ALI or anything else. It probably doesn't even have the caller's phone number. That's why it is called "Phase 0".....at least it gets answered in a PSAP, but that's about all.

Under Phase .5, pretty much the same scenario takes place, except that rather than being sent to a 7 digit number at the MCSO PSAP, the call is sent to the 10 digit number (includes area code) that is the "secret back-door number" to the E911 trunks serving the MSCO PSAP. In other words, if anyone were to dial that "secret back-door 10 digit number" from anywhere in the world, their call would ring into the MCOS PSAP on a 911 trunk. By pointing Phase .5 wireless 911 calls to this number, it at least gets them on the E911 trunk, to be recorded as an E911 call and prioritized and answered as such. But they still contain none of the regular E9112 data. In fact the E911 ALI screen usually says something like 911-0000 as the caller's number, and "ANI DID OR 911 WAS NOT DIALED". That's what Phase .5 is all about.

Phase 1 is a step up from .5, but it requires some major work by the wireless carriers and the PSAP community. Simply put, Phase 1 involves deciding which PSAP to route these calls to based on the antenna face on the cell tower/site that initially served the call, and then populating a subset of the E911 ALI database with information regarding the location and possible radio signal coverage area of that cell sector. Furthermore, modifications are made to the wireless and E911 networks to permit the passage of the calling party's cell phone number to a transitory database so that a call back number can be provided. In the end, a Phase 1 call is infinitely better than a Phase 0 or .5 call since it will contain a call back number and has a chance of being routed to a PSAP that is logical for where the caller was WHEN THEY PRESSED SEND ON THEIR PHONE. However, the degree of granularity of the location information as a vehicle for finding a caller is marginal. Clearly if it is a rural cell tower 400 feet tall, the coverage area of a given sector will be huge and the Phase 1 capability will be of marginal value. But, if it is a very narrowly pointed urban cell sector such as one that points into a tunnel, then the value of a Phase .5 call can be considerably greater.

As for Phase 2, it is essentially an additive to Phase 1. Simply put, the call is still routed and processed as if it were a Phase 1 call, but in most cases there is the availability of presenting the caller's latitude and longitude information to the E911 network for addition to the call record. In the vast majority of cases, however, this positional data is not available soon enough in the life of a wireless 911 call to be of value for routing the call (hence the Phase 1 routing), and is usually only available to the answering dispatcher once an "ALI re-bid" is performed a few seconds after the call in answered. In some cases, recreated ALI rebids (with a few seconds in between) will result in updated positional information for the call, almost permitting "virtual tracking" of the caller as they move.

Finally, we ran into some significant confusion in the County when we asked this question: ***"Does your PSAP initially answer any wireless E911 calls?*** Some of the PSAPs said YES. And we would try to dial a wireless 911 call from within that PSAP and it was answered at the County PSAP. Some said NO, they are answered by the Highway Patrol. And we would dial a 911 call from our cell phone in that PSAP and it would be answered at the MCSO PSAP. In the end, we think that most to all wireless 911 calls are now initially answered at the MCSO PSAP, but many of these calls are then transferred to the other PSAPs where they belong. We learned that it is NOT the SOP of the MCSO PSAP to "announce these transfers". As such, when the call rings into a given city PSAP on the 911 line, the call taker picks it up, and **absent any advisory to the contrary about that call being transferred to them by the MCSO PSAP**, the call taker is free to assume that they were the initial answerer of that call, when they were not. We disagree with this procedure. We think all 911 transfer calls should always be announced by the transferring party.

The above is but a small portion of the information that will need to be considered by the County's 911 plan modification committee process in order to make informed decisions on issues such as:

- To which PSAPs should wireless 911 calls be initially routed?
- Which PSAPs should have upgraded equipment and training to receive them?
    - Maybe ALL, since any call could be transferred to any PSAP.
    - Who will be responsible to build and maintain the GIS base maps that are E911 MSAG valid onto which wireless and (hopefully) wire-line 911 call locations can be plotted?
- To which PSAPs should the proceeds of the wireless 911 surcharge go?
- What SOPs should be established regarding the processing of wireless 911 calls?
    - Call backs on hang up calls, etc.
- What SOPs should be established for periodically reassessing wireless call routing decisions made today?

PSAP Activity and workload data

With the earlier "counting widgets" caveat in mind, this PSAP's annual cost/activity data is:

# 7-digit calls	# 911 calls	# Events Dispatched	Population served	# Full time equivalent (FTE) PSAP staff	Annual PSAP operating cost
213,491	368,326	376,871	113,203	37.5	$2,100,567

Notes on the above:

- 7-digit calls: The MCSO PSAP operators are not the "general telephone operator for the entire Sheriff's Office", 24 hours per day. This number (213,491) amounts to a daily average of 584.9, and an hourly average of 24.37.

- #911 calls: Data from Positron call tracking equipment represent the number of calls answered. These 368,326 calls to 911 work out to a daily average of 1,009, and an hourly average of 42 calls per hour. This PSAP initially answers all 911 calls from those areas of the County where the Sheriff's Office is the primary law enforcement agency, such as the unincorporated areas of the County, plus others (Washington Township, for example, where they provide that service on a contract basis) where they are the law enforcement agency of record. Additionally, it appears as if all or most wireless 911 calls are initially answered at this PSAP, although we obtained some conflicting information on that point. Our experience nationwide in urban counties tells us that wireless 911 calls are now very likely to account for something over 50% of all 911 calls in a given jurisdiction, and often higher when there is a major freeway (or two) running through the County.

- # Events dispatched: The number of times in the year when a dispatcher told a field responder to go someplace and do something and for which a tracking record was created like "a tic mark being made" to keep track of how many times it was done during a year.

- Population: For this item, we took the County's total population and then subtracted from that the service population of all of the Primary PSAPs (and any jurisdictions they provide contact 911 call answering for) that were NOT the Sheriff's Office. The remaining balance was deemed to be the "911 direct service jurisdiction" population for the MSCO PSAP. ***We recognize this is arbitrary and does not recognize the fact that the MCSO's wireless 911 call taking role is spread pretty much across the County.***

- Annual operating cost: As reported by the PSAP in our survey, and these costs were not broken out any further, except to report that revenue of $354,244 was received for dispatch contract services. Spreading this total annual cost of $2,100,587 across this service population of 113,203 results in a per capita cost of $18.56.

PSAP Staffing and deployment practices:

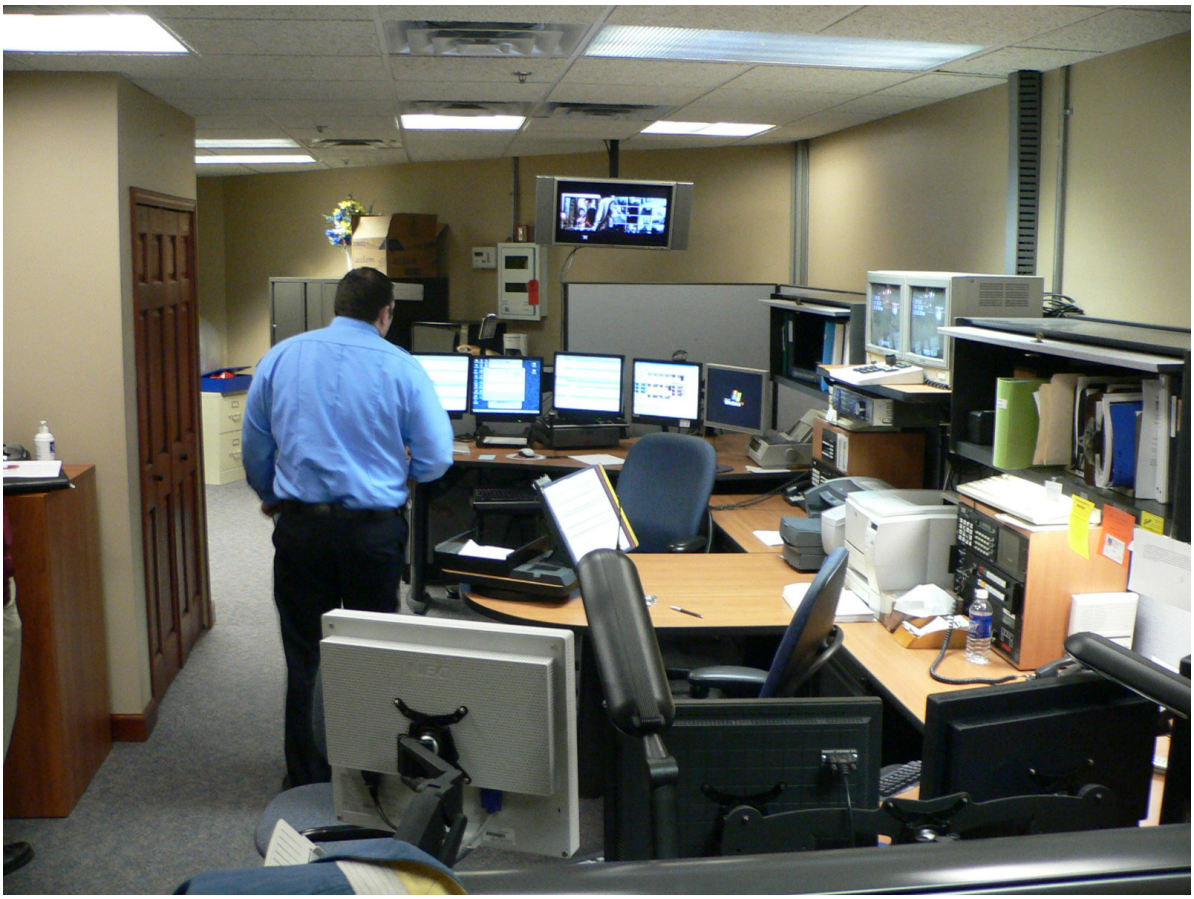
The MCSO reports employing 33 full time persons in the role of dispatcher/911 operator and 4.5 FTE deputies in the role of Supervisor, and that each full time employee is scheduled to work 2,080 hours per year. This level of staffing will support an average of about 8 persons on duty at any one time, 24 x 7.

13. Moraine Police Department

PSAP Location: 4200 Dryden Rd., Moraine
PSAP call taking workstations: 2
CAD Workstations: 2

Current PSAP Inventory and Review

Moraine is a rather small community, population wise, with a very large industrial base. As such, it has a larger and better equipped PSAP than one might expect to find in a similarly sized city. A photo of their PSAP is below:



Two way radio in Moraine:

Moraine Police and fire operate as full subscribers on the County's 800 MHz trunked radio system. As such their two Motorola CentraCom Gold Elite consoles mostly facilitate access to that system

CAD and data systems in Moraine:

Moraine operates as users on the Sheriff's Tiburon CAD system like Miami Township. They also have MDCs on the County's mobile data system, interfaced to CAD.

E911 PSAP Telephony in Moraine

The Moraine PSAP has a two position Positron LifeLine 100 E911 system that serves (according to their survey response) only one 911 trunk. We think this number might be in error in that we have never seen a PSAP (even in cities much smaller than Moraine) with only one 911 trunk.

EMD services in Moraine

EMD services are not offered by the Moraine PSAP.

PSAP Activity and workload data

With the earlier "counting widgets" caveat in mind, this PSAP's annual cost/activity data is:

# 7-digit calls	# 911 calls	# Events Dispatched	Population served	# Full time equivalent (FTE) PSAP staff	Annual PSAP operating cost
40,000	5,040	15,012	6,897	5	$362,587

Notes on the above:

- 7-digit calls: The Moraine PD PSAP operators are the general telephone operator for the entire department, 24 hours per day. This number (40,000, an obvious estimate) works out to an average of 110 calls per day, or about 4.5 calls per hour.

- #911 calls: Data from the Positron call tracking equipment represent the number of calls answered. These 5,040 calls to 911 work out to a daily average of 13.8, and an hourly average of just over 1 call to 911 every two hours.

- # Events dispatched: The number of times in the year when a dispatcher told a field responder to go someplace and do something and for which a tracking record was created like "a tic mark being made" to keep track of how many times it was done during a year.

- Annual operating cost: As reported by the PSAP in our survey, and these costs were broken out as follows:

- Personnel: $344,635 (95%)
- Equipment: $ 15,628 (4.3%)
- Other: $ 2,324 (0.7%)

Spreading this total annual cost of $362,587 across this service population of 6,897 results in a per capita cost of $52.57. This can be explained by the relatively low population across which this cost burden must be placed.

PSAP Staff Deployment practices in Moraine

Moraine PD reports employing 5 FT dispatchers and occasionally uses "Cadets" and police officers in fill-in roles. With 5 FTE dispatchers, they can average just slightly more than one dispatcher on duty at a time.

14. Oakwood Public Safety Department

PSAP Location: 30 Park Avenue, Oakwood
PSAP call taking workstations: 1
CAD Workstations: 0

Current PSAP Inventory and Review

Oakwood is a rather small community and it has a small (1 dispatch position) but relatively well equipped PSAP, pictured below/ Not the public service window to the left, which is closed at the time of this photo since it opens on to the City Hall lobby at which there is a staffed information position. After hours, this service window shade would be up. This PSAP provides all dispatch services to the fully consolidated police and fire responses of the Public Safety Department.

Two way radio in Oakwood:

Oakwood Police and fire operate as subscribers on the City of Dayton's 800 MHz trunked radio system. As such their Motorola CentraCom Gold Elite console mostly facilitates access to that system. They appear to be the only separate PSAP entity that operates on the City of Dayton's trunked radio system.

CAD and data systems in Oakwood:

Oakwood does not use a CAD system, but they do have MDCs in their patrol units that are interfaced to the State of Ohio NCIC systems using a commercial cellular network as their RF medium. They use the CMI RMS system and the dispatchers are the main data entry point for all information into this system, but this role is primarily a clerical added task, rather than being dispatch directly related.

E911 PSAP Telephony in Oakwood:

The Oakwood PSAP has a one position Emergitech™ E911 system that serves two 911 trunks. Perhaps as a testament to how few 911 calls they receive (just less than four per day, on average) this equipment is rather inconveniently placed back in a corner of the dispatcher's work cubicle as shown below:

EMD services in Oakwood

EMD services are not offered by the Oakwood PSAP.

PSAP Activity and workload data

With the earlier "counting widgets" caveat in mind, this PSAP's annual cost/activity data is:

# 7-digit calls	# 911 calls	# Events Dispatched	Population served	# Full time equivalent (FTE) PSAP staff	Annual PSAP operating cost
27,500	1,341	4,787	8,817	5	$298,000

Notes on the above:

- 7-digit calls: The Oakwood PD PSAP operators are the general telephone operator for the entire department, 24 hours per day. This number works out to an average of 75 calls per 24 hour day, or about 3 calls per hour.

- #911 calls: Data from the E911 call tracking equipment represent the number of calls answered. These 1,341 calls to 911 work out to a daily average of 3.67, and an hourly average of just over 1 call to 911 every eight hours.

- # Events dispatched: The number of times in the year when a dispatcher told a field responder to go someplace and do something and for which a tracking record was created like "a tic mark being made" to keep track of how many times it was done during a year.

- Annual operating cost: As reported by the PSAP in our survey, and these costs were broken out as follows:

- Personnel: $275,000 (92.2%)
- Equipment: $ 23,000 (7.8%)
- Other: $ 0

Spreading this total annual cost of $298,000 across this service population of 8.817 results in a per capita cost of $33.80, which is a relatively high figure. This can be explained by the relatively low population across which this cost burden must be placed.

PSAP Staff Deployment practices in Oakwood

Oakwood PD reports employing 5 FT dispatchers. With 5 FTE dispatchers, they can average just slightly more than one dispatcher on duty at a time.

CCTV Monitoring @ Oakwood PSAP:

The dispatchers at Oakwood have access to and actively monitor an extensive CCTV operation to include a city recreational facility as well as the city hall building.

15. Vandalia Police Department

PSAP Location: 333 Bohanon Drive, Vandalia
PSAP call taking workstations: 1
CAD Workstations: 0

Current PSAP Inventory and Review

The Vandalia Police PSAP provides all 911 call taking and dispatch services for the Vandalia police and fire departments. It operates out of a spacious and well equipped two position PSAP facility in the municipal building shown below:

Two way radio in Vandalia:

Vandalia Police and fire operate as subscribers on the County's 800 MHz trunked radio system. As such their Motorola CentraCom Gold Elite console mostly facilitates access to that system.

CAD and data systems in Vandalia:

Vandalia uses the Cisco™ CAD system which also supports MDCs in the field units which are interfaced to it over the County's 800MHz data network.

E911 PSAP Telephony in Vandalia:

The Vandalia PSAP has a two position Positron™ LifeLine 100 E911 system that serves two 911 trunks. This equipment is nearing the end of its useful life and will probably need replacing or significant upgrade to become compatible with wireless E911 (it has no mapping capability) and VoIP connectivity.

EMD services in Vandalia

EMD services are not offered by the Vandalia PSAP.

PSAP Activity and workload data

With the earlier "counting widgets" caveat in mind, this PSAP's annual cost/activity data is:

# 7-digit calls	# 911 calls	# Events Dispatched	Population served	# Full time equivalent (FTE) PSAP staff	Annual PSAP operating cost
30,108	4,722	13,432	14,603	5	$387,025

Notes on the above:

- 7-digit calls: The Vandalia PD PSAP operators are the general telephone operator for the entire department, 24 hours per day. This number works out to an average of 82.5 calls per 24 hour day, or about 3.5 calls per hour.

- #911 calls: Data from the E911 call tracking equipment represent the number of calls answered. These 1,341 calls to 911 work out to a daily average of 12.94 and an hourly average of just over 1 call to 911 every two hours.

- # Events dispatched: The number of times in the year when a dispatcher told a field responder to go someplace and do something and for which a tracking record was created like "a tic mark being made" to keep track of how many times it was done during a year.

- Annual operating cost: As reported by the PSAP in our survey. They also reported a very high "equipment cost" of $113,155, but we are not counting that as a part of the PSAP's annual operating cost, unless it can be established that it is an annual, recurring cost and not primarily a one time expenditure. Spreading this total annual cost of $387,025 across this service population of 14,603 results in a per capita cost of $26.50.

PSAP Staff Deployment practices in Vandalia

Vandalia PD reports employing 5 FT dispatchers. With 5 FTE dispatchers, they can average just slightly more than one dispatcher on duty at a time.

16. Washington Township Fire Dept.

PSAP Location:
PSAP call taking workstations: 2
CAD Workstations: 2

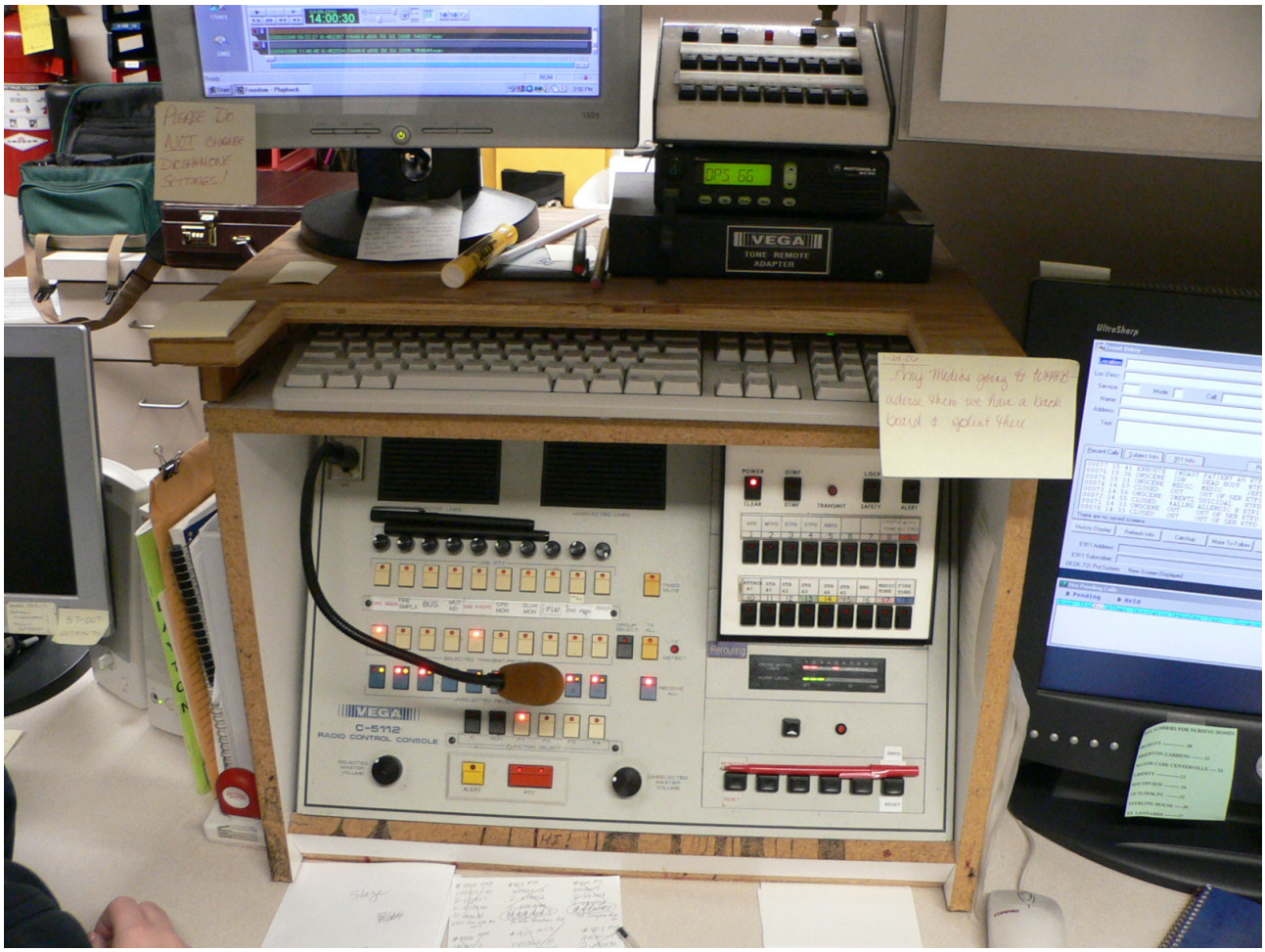
Current PSAP Inventory and Review

The WTFD PSAP is a secondary PSAP for fire dispatching for Centerville and the unincorporated area of Washington Township. It generally receives its 911 calls either the Centerville PD PSAP or the MCSO PSAP, as the MCSO is the primary law enforcement agency in the non-Centerville portion of the Township. The PSAP facility is a cramped little space on the lower level of a fire station shown through the public service window below:

Two way radio in the WTFD:

The WTFD operates a number of base and field radios on a variety of 150 MHz VHF and 450 MHz UHF radio channels, as well as some 800 MHz channels on the Centerville PD system and some talk groups on the MCSO trunked radio system. It would appear as if none of the VHF and UHF radio channels have been re-licensed pursuant to the FCC's "narrow banding" rules (which will be required by 2013) and it is unknown the degree to which their radio equipment is "narrow band capable" or will need replacing.

Access and control of this radio system is via two rather old and limited VEGA consoles depicted below:



CAD and data systems @ the WTFD PSAP:

The WTFD uses the Sheriff's Tiburon™ CAD system and has two workstations on it. They do not utilize MDCs or support AVL. .

E911 PSAP Telephony @ the WTFD PSAP:

The WTFD PSAP has a two position Positron™ Power 911 system that serves two 911 trunks. This equipment will probably need replacing or significant upgrade to become compatible with wireless E911 (it has no mapping capability) and VoIP connectivity.

EMD services @ the WTFD PSAP

EMD services are not offered by the WTFD PSAP.

PSAP Activity and workload data

With the earlier "counting widgets" caveat in mind, this PSAP's annual cost/activity data is:

# 7-digit calls	# 911 calls	# Events Dispatched	Population served	# Full time equivalent (FTE) PSAP staff	Annual PSAP operating cost
364	0	5,300	0	6.5	$328,610

Notes on the above:

- 7-digit calls: The WTFD PSAP operators are not the general telephone operator for the entire department. This extremely low number works out to an average of 1 seven digit call per 24 hour day.

- #911 calls: The WTFD did not report how many 911 calls they received, although all of them would have been initially answered elsewhere and then transferred here. This data should be knowable, and if not at the PSAP or by PSAP staff, then from SBC, on the basis of ALI retrievals initiated by their Positron equipment.

- # Events dispatched: The number of times in the year when a dispatcher told a field responder to go someplace and do something and for which a tracking record was created like "a tic mark being made" to keep track of how many times it was done during a year.

- Annual operating cost: As reported by the PSAP in our survey.

PSAP Staff Deployment practices @ the WTFD PSAP

This PSAP reports employing 5 FT and 3 PT dispatchers, which we have equated to be 6.5 FTE. . With 6.5 FTE dispatchers, they can average about 1.3 dispatchers on duty at a time. When we visited during a day shift there were two on duty.

17. West Carrollton Police Department

PSAP Location: 300 E. Central Av., W. Carrollton
PSAP call taking workstations: 2
CAD Workstations: 2

Current PSAP Inventory and Review

The West Carrollton Police PSAP provides all 911 call taking and dispatch services for the West Carrollton police and fire departments. It operates out of a spacious and well equipped two position PSAP facility in the municipal building shown below:

Two way radio in West Carrollton:

West Carrollton Police and fire operate as subscribers on the County's 800 MHz trunked radio system. As such their Motorola CentraCom Gold Elite console mostly facilitates access to that system.

CAD and data systems in West Carrollton:

West Carrollton uses the Cisco™ CAD system. They also operate MDC units in the field units but they are not interfaced to the Cisco CAD and only access the State of Ohio criminal justice systems.

E911 PSAP Telephony in West Carrollton:

The West Carrollton PSAP has a two position Emergitech™ E911 system that serves two 911 trunks. This equipment is nearing the end of its useful life and will probably need replacing or significant upgrade to become compatible with wireless E911 (it has no mapping capability) and VoIP connectivity.

EMD services in West Carrollton

EMD services are not offered by the West Carrollton PSAP.

PSAP Activity and workload data

With the earlier "counting widgets" caveat in mind, this PSAP's annual cost/activity data is:

# 7-digit calls	# 911 calls	# Events Dispatched	Population served	# Full time equivalent (FTE) PSAP staff	Annual PSAP operating cost
79,125	11,250	33,067	13,818	6	$440,000

Notes on the above:

- 7-digit calls: The West Carrollton PD PSAP operators are the general telephone operator for the entire department, 24 hours per day. This number works out to an average of 217 calls per 24 hour day, or about 9 calls per hour.

- #911 calls: Data from the E911 call tracking equipment represent the number of calls answered. These 11,250 calls to 911 work out to a daily average of 31 and an hourly average of just over 1.25 calls to 911 every hour.

- # Events dispatched: The number of times in the year when a dispatcher told a field responder to go someplace and do something and for which a tracking record was created like "a tic mark being made" to keep track of how many times it was done during a year.

- Annual operating cost: As reported by the PSAP in our survey. Of the $440,000, they report that 95.9% is for personnel costs and just over 4% is for equipment. Spreading this total annual cost of $440,000 across this service population of 13,818 results in a per capita cost of $31.84.

PSAP Staff Deployment practices in West Carrollton

West Carrollton PD reports employing 6 FT dispatchers. With 6 FTE dispatchers, they can average about 1.25 dispatchers on duty at a time.

Summary Montgomery County 911 System(s)
Cost and Activity Data

911 PSAP Agency	Pop. for which *wired* 911 calls are *initially* answered	# Full time equivalent *working* staff	Annual operations budget (not incl. capital expenses)	# 911 calls answered	# 7 digit calls answered	Number of events dispatched
Brookville Police	15,704	5	$239,500	4,848	34,712	22,023
Centerville Police	23,024	6	$319,089	5,309	85,775	29,376
Dayton Police	166,179	48	$3,174,600	105,757	258,610	189,887
Dayton Fire	0	15	$1,238,200	30,389	60,048	37,646
DAYTON SHARED	0	0	*$730,533*	0	0	0
Englewood Police	30,937	8.5	$506,437	13,379	68,400	36,126
Germantown PD	4,884	5	$180,000	3,150	25,462	14,353
Huber Heights PD	38,212	11.5	$819,926	5,164	58,040	61,192
Kettering Police	57,502	9.5	$686,842	14,277	82,000	72,737
Kettering Fire	0	4	$327,640	0	5,500	6,600
Miami Twsp. PD	45,593	8	$459,959	10,008	57,426	29,490
Miamisburg Police	19,489	7	$438,296	10,684	128,339	32,470
Montgomery S.O.	113,203	37.5	$2,100,567	368,326	213,491	376,871
Moraine Police	6,897	5	$362,587	5,040	40,000	15,012
Oakwood Pub. Saf.	8,817	5	$298,000	1,341	27,500	4,787
Vandalia Police	14,603	5	$387,025	4,722	30,108	13,432
Washington Twsp FD	0	6.5	$328,610	0	364	5,300
West Carrollton PD	13,818	6	$440,000	11,250	79,125	33,067
TOTALS	**558,862**	**192.5**	**$13,037,811**	**593,644**	**1,254,900**	**980,369**

Notes and comments:

1. Dayton FD's 60,048 calls to 911 are all transferred to them from other PSAPs so, these are **double counts**
2. Kettering FD and Washington Twsp FD's 0 calls to 911 is misleading. They get almost all of their calls on 911 lines, but they are transferred to them from other PSAPs. The plus side is that there are no double counts here.

Technical Summary of Montgomery County PSAP Communications Systems

The public safety agency communications systems and operations reviewed in this report are:

1. **Montgomery County Sheriff's 800 MHz trunked radio system and the similar 800 MHz trunked radio system used by the City of Dayton, as well as the UHF, VHF and conventional 800 MHz radio systems used by several of the cities and townships.**

2. **The Ameritech/SBC (now The New AT&T) Enhanced 911 network and database.**

For the purpose of this report (determining potential opportunities for consolidation), and to assist in drawing possible conclusions, it may help to identify similarities and differences in the existing radio systems and operations.

Similarities:

- All entities are using analog radio technology (as opposed to digital or other format).
- All of the police, fire and EMS agencies using the County or Dayton 800 MHz trunked radio systems have the radio channels or talkgroups of the neighboring agencies programmed into their mobile and portable radios, as well as various mutual aid channels, thus providing for **excellent interoperability.**
- All of the fire agencies using VHF have the radio channels of the neighboring agencies programmed into their mobile and portable radios, as well as various fire mutual aid channels.
- All of the agencies are a part of the same SBC Enhanced 911 network and are served by the same SBC E911 Automatic Location Information (ALI) database.
- All of the VHF (150 MHz) and UHF (460 MHz) agencies in the County need to be mindful of their potentially significant cost exposure to issues related to the "narrow-banding below 512 MHz" issue. None of them has yet re-license to the soon-to-be-required 12.5 KHz wide channels from their current 25 KHz wide channels, no have they presumably replaced all of their equipment with equipment that is 12.5 KHz capable.

Differences:

- Some of the agencies require relatively wide-area coverage from their radio systems (Montgomery County Sheriff, for example).
- City based agencies and radio systems only require coverage for smaller geographic areas, at least for their routine day-to-day operations.
- The E911 call termination equipment in the PSAPs is varying technology and currency, but there are at least three different vendor's systems in place (Plant Equipment, Emergitech and Positron). This is relevant because one could not generally "mix and match" these different equipment sets if one was to bring them together for a larger PSAP. This would likely dictate settling on one vendor and buying enough of their equipment to provide adequate capacity for a larger, consolidated PSAP.
- The E911 telephony equipment or the E911 telephony portion of the combined 911/radio equipment in some of the PSAPs generally (but not in all cases) needs to have GIS mapping capabilities added to it, or (at least) to the CAD systems in those facilities. Additionally, significant work is required on GIS base map data to make it compatible with the E911 MSAG street naming conventions.

- The radio control console equipment is of varying brand, functionalist and technology currency. However, the expandability of these systems is less a function of whether or not additional channel controls can be added to the computer display screen the dispatcher interacts with and more a function of "card cage capacity" in the "back room" Central Electronics Bank (CEB) being manipulated by the computer monitor/workstation. The equipment at the several PSAPs (most notable Dayton PD) is nearing its retirement point. The general hassle factor and difficulty in marrying parts from different equipment suites in a "mission critical" environment such as PSAPs generally argues against trying to use piece-parts to put together one larger console system for a consolidated PSAP.

PSAP Data Systems in general (CAD specifically):

As we have previously mentioned, most of the PSAPs operate police and/or fire CAD systems. The Sheriff and several of the city police and fire PSAPs share a CAD system, (the Sheriff's system). **This is an excellent start for CAD interoperability.**

However, having these CAD systems in place did not automatically make the collection of comparable agency-to-agency data for this study easy. As we discussed in each PSAP section of the report, data (and what it meant) can be difficult to interpret from entity to entity.

Nevertheless, if a consolidation of several or all of the PSAPs is to occur, it is a good thing that CAD is already present and a part of the work processes in the agencies. Without CAD, the size and work level of any newly consolidated PSAP would begin to be unworkable.

As used in the County's smaller PSAPs today, CAD is primarily a record keeping device, and an "automated log" which also checks some relevant files as data is entered. This is fine and is not a criticism. However, when implemented in a larger, multi-operator PSAP where dispatchers may be performing different roles or providing dispatching services to different agencies, CAD takes on far greater importance than is currently the case in most of Montgomery County's PSAPs. The notable exceptions would be Dayton PD where the do have "two stage" dispatching, and the MCSO, with its high call volumes.

Simply put, E911 and incoming 7-digit calls are generally not selectively routed within a PSAP. This means that when there are 4 dispatchers on duty at four workstations (two of which may be 25 feet apart from each other) any one of the four may be eligible to answer a 911 or other call from any place within the PSAPs service area.

If one were to have the Sheriff's 911 dispatchers, the Dayton PD dispatchers, the Kettering, Huber Heights and Vandalia 911 dispatchers all in one big room, and each was dealing **only** with their own community/agency and its police and fire departments, then one would not have accomplished much in the consolidation of the PSAPs, except that they'd all be in the same room. In and of itself, this "non-selective routing of incoming calls" would not be fatal. However, add to that the fact that each of the 911 operators is generally managing one of several radio channels and agencies that work on that radio channel and the part of the jurisdiction where those agencies tend to work. This means, for example, that if you are a dispatcher handling Channel A, which is for Town X, and you happen to answer a 911 call from (for example) that portion of Town Y a few blocks from the PSAP, you may also have to dispatch responders to that call, on different radio channel than the one you had been managing.

Furthermore, since you had not been managing the units on the other radio channel, you may have minimal to no awareness of which units are doing what, and you may not even know if some unit has already been assigned to the event you are about to dispatch, due to a call being previously answered and dispatched by one of your co-workers. Often the only way out of this dilemma is to shout (so all other dispatchers can hear you over the radio channel and/or phone traffic blasting into their one ear) to see if anyone else knows anything about this event and if you should go ahead and dispatch it as an all-new emergency call.

It is just this sort of chaos that led to the development of CAD systems. With CAD, every operator who answers a phone call has instant access in front of them on a computer screen to a listing of all "events in various stages of being handled". They also have instant access to a listing of "all units eligible for assignment" and whether they are available or not, and, if not, what event they are assigned to, and how long they have been doing it and where.

But this description only scratches the surface of the power, flexibility and functionality of CAD. We will cover more on CAD elsewhere in the report.

The degree to which this situation occurs in any PSAP is almost 100% a function of the level of activity and the number of dispatchers/operators working. It occurs even in modest size PSAPs the size of those in the Sheriff's Office and Dayton P.D. today, except that the four to seven dispatchers who need to coordinate are within 20 feet of each other, are (in the case of the MCSO, at least) generally operating on and listening to the same radio channel, are all responsible for the same field units and the same geography, (except for the Trotwood P.D.) and can generally overhear what each other is saying on the phone or radio, thereby making coordination much easier.

In smaller PSAPs, it is our view that CAD is not purchased, nor is it a requirement, for the same reasons that it is needed and purchased in larger and busier PSAPs. In small agencies, CAD is not a necessity, per se, to assist the one or two dispatchers on duty in managing their workload or tracking their available field units. It is very valuable, however as a vehicle for expediting the collection and recording of important data associated with the event, such as times, etc. This is as opposed to relying on an already harried dispatcher to remember to either time stamp a card or write a time on it, or remember to ask an important question, for which a CAD system could provide a prompt.

Another major component to the "controlled chaos" we are describing here is related to the three other important issues of:

a.) One stage dispatch vs. two stage dispatch
b.) Service specific dispatch vs. cross-service dispatch.
c.) Geographic consolidation (or not) of police radio districts.

These are all issues that can be facilitated, organized and expedited by the use of a properly configured and managed CAD system.

Briefly, with CAD it is far easier to implement "2 stage dispatching" and provide the benefits (and, unfortunately, endure the shortcomings) of having workstations dedicated to the sole task of answering and devoting 100% of their attention to incoming emergency phone calls, while other workstations are 100% dedicated to dealing with radio dispatching duties.

In a CAD facilitated 2 stage dispatch environment, a "call taker" enters an event for dispatch into CAD *(after a quick glance tells whether or not the same event has already been entered for*

dispatch by another call taker, and is subject to review and updating or addition of timely information by this 2nd call taker), and the CAD system automatically prioritizes the event (based on its assigned "nature code") and routes it to the workstation of the radio dispatcher who is handling the agency(is) which should respond to that type of "nature code" event in the part of the jurisdiction where the event is taking place.

As it relates to "service specific" vs. "cross-service" dispatching and how it is affected by CAD, note that in the scenario depicted immediately above, we mention that CAD will route the event that was entered by the call taker to the ***"radio dispatcher who is handling the agencies who should respond to that event".*** In a "cross-service" dispatch environment, this CAD decision is based 100% on geography. In other words, CAD knows which dispatcher position is handling a given town or jurisdiction for police, fire and/or EMS dispatching, and routes the event for dispatch to that dispatch position.

In "service specific dispatch" (as opposed to cross-service) on the other hand, there is a separate dispatch position(s) which is/are dedicated to fire and/or EMS dispatch for a given geographical area, separate from a dispatch position which is handling law enforcement dispatch for the same geographic area. In this environment, CAD knows this, and sends the fire event (for example) to the fire dispatch position handling that area. CAD can even "clone events" and send a copy of the same event for dispatch action to several different service specific workstations. Assume, for example, a serious personal injury car accident requiring the response of police, fire (for heavy rescue) and paramedic ambulance(s). Assume further that there are "service specific" dispatch positions for each of these three services (PD, FD and EMS). The 911 call taker enters one event, but by classifying it as an "Injury Accident", CAD knows that it is a PRIORITY 1 EVENT which requires dispatch of each of the three services, and it automatically sends a copy of that same event to each of the three dispatch positions for their independent dispatch action. Further, any one of the service specific dispatchers can view that event in the other service's "version" via a few keystrokes. For example, a police officer hearing a fire truck responding someplace asks her dispatcher "Where's the fire?" The dispatcher looks at the ACTIVE EVENTS portion of the CAD screen, finds the Fire event number and keys in that event # plus the letter "F" for Fire and instantly sees the fire event in CAD, complete with who was assigned, when and from where, how it was reported, by whom, from where and when.

Finally, relating to CAD, we would be remiss by not also mentioning MDTs/MDCs. Not only does having these devices in field units (particularly police units) mean that field officers can generally run their own data checks, such as driver's license queries, car registration queries, etc. (thereby off-loading a massive amount of work from the PSAP operators), but these devices can be fully integrated with CAD such that much of the radio traffic between dispatchers and field units and from field unit to field unit can be eliminated.

Simply put, any PSAP that is handling the workload and the number of agencies that would be handled by a consolidated Montgomery County PSAP will require and enjoy the power and benefits of both CAD and mobile data devices. Having observed the CAD systems in Montgomery County, we believe several of them would be able to serve this proposed consolidated PSAP well, although the Sheriff's CAD would probably need the least modification as it is already serving several police, fire and EMS agencies.

IV. Options Development and Analysis Section:

In this section of the report we will develop the several options that exist for the potential reconfiguration of 911 call taking and dispatching services in Montgomery County, and then provide our analysis of each of these options. We have been specifically tasked to not articulate one preferred recommendation, should one stand out in our view. Rather, it is our understanding that the Steering Committee for this project prefers that we spell out the several options that may exist, make commentary on their strengths and weaknesses and any issues associated with implementing any of them, and then let the collaborative processes of the committee (and other bodies) determine their preferred course of action.

However, before we begin to identify specific options it is important that we restate the underlying premise(s) behind such a study process. It has been our experience that the 911 service providers in a given jurisdiction (usually a county) get to the point of exploring various configurations and options for one or two major reasons, and possibly a combination of them

- **They want to see if they can deliver the services in a less costly fashion.**
  - This may relate, for example, to the potential of an upcoming major technology implementation (such as a countywide trunked radio system, or an all-agency shared CAD system, or the implementation of wired and wireless Phase 2 911 call mapping) and they are wondering if they could do it less expensively if there were fewer 911 dispatch centers for which to provide equipment.
  - This may relate to the recurring costs of having to staff numerous dispatch centers 24 hours a day.

- **They are seeking to determine whether, if by changing the configuration of their 911 call taking and dispatching processes, they could:**
  - Reduce 911 call processing delays
  - Reduce time spent transferring 911 calls from one PSAP to another
  - Reduce the potential for dropped calls or lost information in 911 call processing resulting from transfers.
  - Increase situational awareness and/or reduce fragmentation or lack of coordination in emergency responses or situation handling by having "command and control" (dispatching) more centralized.

First of all, as it relates to transferring 911 calls from one PSAP to another, this generally occurs in one of two situations:

1. Either when the decision has been made to operate "Secondary PSAPs", meaning dispatch centers other than the one where the 911 call was initially answered and from where fire and/or EMS are dispatched from.
2. When it is decided (by design) to have all wireless 911 calls in the County centrally answered in one PSAP for the County and then they often have to be transferred to other PSAPs (if other PSAPs exist), or where a wireless 911 call (due to the vagaries of radio signal coverage and cell sector routing) happens to route to a PSAP not appropriate for the caller's location and it needs to be transferred to another, more appropriate PSAP.

As for the Secondary PSAP scenario, it is important to understand that to have or not have Secondary PSAPs for such purposes as fire-rescue dispatch or EMS dispatch is 100% an optional

administrative/organizational decision. In many entities (some of which are far larger than all Montgomery County entities combined) they perform all 911 call answering and dispatching activity for law enforcement, fire and EMS inside one PSAP under one administrative structure. In many other communities (many far smaller than Montgomery County) they have chosen to operate Secondary PSAPs. In other words, it is not a requirement at some size or activity level to use or not use the Secondary PSAP model. More often, it has resulted from a combination (in varying degrees) of finances, small "p" politics, labor organization strength or weakness and work culture differences between the police, fire and EMS services, and whether or not EMS services are provided by a public entity or a private contract entity. The decisions made in this regard in Montgomery County appear to have been typical of what we have seen in older, more established counties with a large established urban center and numerous suburbs and exurbs. That does not make them the right or wrong decisions, only typical of the decisions that others have made in similar environments.

Interestingly, we see significant differences in this regard based on the age of a state (much more local duplication and/or redundancy in the more established Eastern states than in the 'younger' Western states) and the role said State's legislature has chosen to take regarding 911 services. In some states (CA, MN, OR, WA to name a few), the State has the ultimate power regarding 911 plans, 911 funds, number of 911 PSAPs, etc. In others such as OH, MI, IL, IN we see much more "local control" and less guidance and assistance from the state.

As it relates to the general issue of "improving services", we think the following statement accurately sums up the generic role of "emergency communications" in the overall public safety services process:

THE BOTTOM LINE IN EMERGENCY COMMUNICATIONS SERVICE IS THAT IT HAS ALMOST NO CHANCE OF STOPPING A BAD THING FROM HAPPENING OUT IN THE REAL WORLD. WHEN EMERGENCY COMMUNICATIONS HEARS ABOUT IT, SOMETHING HAS USUALLY ALREADY GONE WRONG. BUT, EMERGENCY COMMUNICATIONS IS UNIQUELY POSITIONED TO IMPACT ON HOW THINGS GET HANDLED IN THAT BAD SITUATION, FROM THAT POINT FORWARD. AND PROPERLY ORGANIZED, STAFFED, TRAINED, SUPERVISED, EQUIPPED AND OPERATED, THIS ESOTERIC SERVICE CAN OFTEN BE THE DIFFERENCE BETWEEN A BAD INCIDENT TURNING INTO A WORSE INCIDENT AS OPPOSED TO A BAD INCIDENT HAVING A POSITIVE OUTCOME, AND THE PUBLIC SAFETY RESPONDERS ACTUALLY HAVING A BETTER CHANCE TO POSITIVELY IMPACT ON THAT OUTCOME.

Recently, we came across a news report of a tragic incident in Somerset County, New Jersey, where decisions regarding how the emergency communications services (911 centers) would be deployed, operated and coordinated had a dramatic impact on the outcome of the situation. Because we think it captures the essence of this service delivery element of our discussion, we are inserting this news report here. The newspaper article reprinted here captures two essential elements that are discussed at some length in this report. The first is the element of how wireless 911 calls get handled, which agency answers them, how is that initial answering agency related to the act of dispatching the fire department, etc. The second essential element is the configuration and number of dispatch agencies which can and often do get involved in trying to deliver a coordinated response to an emergency situation. It seems axiomatic that the fewer 911 calls one needs to transfer, and the fewer messages that need to be relayed from one dispatch center to another, the greater the chances are of a well handled event.

"Key 911 message lost in Franklin fatal fire"

Home News Tribune Online 05/14/06
(A Central New Jersey Gannett newspaper)
By KEN SERRANO, STAFF WRITER

Smoke poured into Laverne Davis' hotel suite in Franklin last May as flames from a blaze that started in a mulch pile climbed up the exterior stairs outside her door.

The fire prevented any escape through the entrance and blew out the living-room window. Davis took refuge in the bathroom, calling 911 operators on her cell phone. Her call for help took a circuitous route. **It went first to state police dispatchers** who passed along the woman's message to Franklin police dispatchers, who radioed police on the road and phoned Somerset County Communications dispatchers. The county dispatchers in turn radioed and paged firefighters and the line officers of at least two fire companies.

But a vital part of Davis' message got lost along the way: her children.

Firefighters entering the hotel suite that night did not know that 11-year-old Myles Davis, an energetic boy named after the jazz musician, and his sister Courtney, 16, a determined athlete and serious student, lay dying inside the bathroom.

The men who fought the blaze at Staybridge Suites on Davidson Avenue saved their mother, found lying on a couch in the living-room hotel shortly after 2 a.m. They discovered the children tangled in debris in the bathroom an hour later, dead.

No review of breakdown

While a year has passed since the tragedy, no agency in Franklin, Somerset County or the state has investigated communication failures that played a role in the children's deaths, nor do any plan to.

Such a review, several officials have said, does not fall within the responsibilities of any agency. They include the Somerset County Prosecutor's Office, the Somerset County Office of Emergency Management and 911 Communications Unit, the Franklin Department of Fire Prevention, the Franklin Board of Fire Prevention and Commissioners of Fire District 1.

Through the Open Public Records Act, the Home News Tribune, as part of its reporting on the fire, obtained and sifted through more than 500 recordings of radio transmissions and phone calls made between 911 operators. While much of what happened on the ground is unknown, those transmissions and calls provide a glimpse of the breakdown. What occurred in the early-morning hours of May 13, 2005, amounted to a tragic version of the children's game of telephone — a message that lost crucial elements as it was passed along.

Domino effect

As in most mishaps, other circumstances in the Staybridge fire contributed to the outcome, falling into place like a line of deadly dominoes: The company monitoring fire alarms, ADT Security Services, did not know of the blaze when it started, police said and reports from that company indicate. A firefighter fell through the burning exterior stairway on the initial ascent to find victims, triggering a rare mayday call. Shin-deep water in the Davis' apartment and the fear of collapse forced the evacuation of firefighters right after they found Laverne Davis.

Two adult victims next door led some to believe all three Davises were found. Dispatchers reported that "two minor civilians" were accounted for. They meant civilians with minor injuries, not children. Some people understood it to be the latter.

And most tragically, sheetrock fell from the ceiling in front of the bathroom door making it seem like a wall, according to one firefighter. Before firefighters found the children, they checked the apartment twice with an imaging camera and scrawled an X outside of the suite to indicate there were no victims inside.

But more than anything, with the exception of the smoke from the blaze, gaps in the 911 system killed Myles and Courtney Davis.

The Davis family had recently moved to Staybridge from their half-million-dollar home on South Grosser Place in the Somerset section of Franklin. Laverne Davis' husband, Wayne, went to North Carolina to start a new job. His wife and children were preparing to join him.

Hours before the fire roared up the stairway, a friend of the family, William Rivera, brought Myles to a carnival at St. Mathias R.C. Church in Franklin with Rivera's son, Michael.

When they returned to Myles' home at 10:15 p.m., he saw two men and a woman outside the apartment "drinking and possibly smoking" he later told investigators. They made him nervous, so he walked Myles to his door.

What time the mulch started burning is impossible to know, said John Hauss, director of the Franklin Township Department of Fire Prevention. Mulch fires can smolder for hours before bursting into flames.

Although investigators did not find an official cause, they mentioned that burned cigarettes were found near where the fire started. Those investigators did not link them to any individual.

About 1:30 a.m., John and Denise Goodman, who lived next to the Davises, heard a crackling noise and the sound of flowing water, they later told a Franklin detective.

John Goodman saw flames rising from the stairway landing. He smashed the thick living-room window with a coffee table and the two slid down from the second floor to safety, suffering cuts and bruises.

John Goodman told patrolman David Spakowski that he saw Laverne Davis banging on a side window and mentioned the two children. Spakowski, in turn, told a line officer — now unknown — from a fire company at the scene, said Franklin Police Chief Craig Novick.

But William Cullen, the chief of Elizabeth Avenue Volunteer Fire Company at the time, said he arrived first and no one gave him those details. He knew nothing of the two children, he said.

Novick said police were at the command post that night. Cullen, the incident commander, said they were not.

Mixed messages

Laverne Davis made the 911 call about 1:40 a.m. All 911 cell calls in New Jersey got routed to the state police, although that has since changed.

The state police denied the Home News Tribune's request for a tape of that call. But in one recording, a state police dispatcher relays the woman's message.

"My partner's on the line with the mom. She said that her and her two kids are stuck in the bathroom and there's a fire in their room and they said it's really smoky in there and they can't breathe that well," the state police operator told Franklin police dispatcher Justin Marchetta at 1:43 a.m.

The Franklin dispatcher immediately called Somerset County Communications and Franklin police on the road, passing on the complete message about the fire in Suite 25.

"You have a working fire in the suite. Parent and two children trapped in the bathroom."

"Really?" the county dispatcher, Dwight Craft, said.

But the subsequent messages given to the Elizabeth Avenue Volunteer Fire Company and Somerset Volunteer Fire and Rescue Company 1 did not include the number of victims. There is no mention of two children. Some radio transmissions mentioned "entrapment" and "possible entrapment" and "possible people trapped." Firefighters received pager announcements that reported only "entrapment," they told investigators.

Later radio messages from Somerset County mentioned critical details, but only some of them.

"That's a confirmed working fire?" Elizabeth Avenue Assistant Chief Darren Salkeld said to the dispatcher after the first transmission he received at 1:49 a.m.

"Yeah, a working fire. PD's on the line with the victims. Still in the apartment. They're in the bathroom. They can't get out," Craft said.

"Did they get anybody out? Or did they confirm there's still people in there? What's going on with that?" Marchetta asked an officer at the scene at 1:57 a.m.

"I believe as far as we know nobody came out," the unnamed police officer said.

Mayday call

Seconds after that last call, firefighter Chris Gianotto of Somerset Fire and Rescue climbed the burning stairs to find victims and plunged through the landing.

Disaster was averted with Gianotto. Fellow firefighters found him within two minutes in the storage area beneath the stairs. He suffered a shoulder injury, according to the reports.

Cullen said the call did not distract firefighters.

"As an incident commander or firefighter if you hear a mayday call your heart stops," Cullen said. "But it didn't add to the confusion in the early stages because they found him quickly."

Not long later, firefighters broke through a side window of Suite 25.

Lt. James Lukac of Elizabeth Avenue Fire Company climbed up a ladder and through the window of Laverne Davis' apartment, searching it with a thermal-imaging camera, according to reports. Those cameras show images of people in smoke as well as heat emanating from walls. He found the woman on a couch a few minutes after 2 a.m.

"Everybody was sky high," said Robert Scheer, a firefighter at the scene and a commissioner for District 1, which includes Elizabeth Avenue Fire and Somerset Fire and Rescue. "It was like going into the bottom of the ninth inning and hitting a home run. Afterward, it was like a kick in the head."

"Textbook' operation

After finding Laverne Davis, firefighters were ordered out of the apartment because of the shin-deep water.

Moments later, at 2:12 a.m., a line officer called out over the operational fire channel, "Have all the victims been accounted for?"

A garbled response indicated that no one knew.

At 2:30 a.m., firefighters returned to the apartment with the imaging camera. But the slab of sheetrock that swung down in front of the bathroom door prevented them from finding the bathroom, according to a firefighter who was at the scene and who declined to be named. No fire official could confirm that and no report reflects the assertion.

"There is no other adult and/or children . . . confirming secondary search of fire room is negative," an unnamed firefighter said over the radio at 2:30 a.m..

It wasn't until shortly after 3 a.m. that firefighters found the two children. They died of smoke inhalation.

"After that, people there were pretty much in a state of disbelief," Scheer said.

Cullen described the operation as "textbook" despite the magnitude of the fire and the hectic pace of events.

"It shouldn't be overlooked that these guys did a heck of a job. They found the lady," he said.

They did so with little time to spare. Medics performed CPR on Laverne Davis when firefighters brought her out of the building.

But neither Cullen nor Keith Silverman, current chief of Somerset Fire and Rescue who was in charge of operations at the Staybridge fire, would discuss why firefighters did not find the children the second time.

Learning from N.Y.

Glenn Corbett, assistant professor of fire science at John Jay College of Criminal Justice in New York City and an assistant fire chief in Waldwick, praised dispatchers and firefighters for their reserve and control of the fire scene after listening to the radio transmissions.

But the tragedy bleeds through that picture.

"The clarity of that message getting to the chief and company officers, to the firefighters running the hose lines . . . apparently it never filters down to them," he said. "There's a tragic lack of information that slipped into the equation."

A high-rise fire in New York City in 1987 in which seven people died bears some similarities to the Staybridge fire, he said. That blaze at Schomberg Plaza in Harlem led to key changes in the accounting of victims.

That fire in Harlem started in a basement trash compactor. Dispatchers failed to tell firefighters on the ground about the more than 20 calls for help they received from people in upper floors. Flames had spread to those floors through a trash chute.

Corbett said a painstaking "postmortem" conducted by the Fire Department of New York led the department to adopt a system detailing the number of victims in certain rooms or apartments, information culled from 911 calls.

Corbett added that the errors made on Davidson Avenue last May could happen anywhere.

"Information gets lost in the radios all the time," Corbett said.

After reviewing recordings from the Staybridge fire, LeRoy Gunzelman III, the director of the Somerset County Office of Emergency Management and 911 Communications, acknowledged the lack of clarity in the initial messages sent out by the county. Gunzelman said he would not let Craft comment.

As for the measures on the accounting of victims taken by New York City after the Schomberg Plaza fire, "There is no protocol for that kind of information to be given to dispatch" in Somerset County, Gunzelman said.

The county's patchwork 911 system would make adopting such a practice difficult, he said.

Somerset County Communications covers the 911 calls for 16 of Somerset County's 21 municipalities. Other towns handle their own calls.

Another level of calls

Franklin police dispatchers pick up landline 911 calls made in the township. When they concern fires, they switch those calls to Somerset County.

At one time, Franklin handled all police and fire calls. ***But township fire companies revolted against that system several years ago because of their unhappiness with the police dispatch system, prompting the shift that added another level of calls.***

Scheer said the fire companies felt the township police dispatchers were overburdened.

Novick finds the switch troubling.

"I still don't understand why it's like this," he said. "Why are they adding another level" of dispatchers?

Improvements ahead

Gunzelman said many of the lapses in the 911 system in Somerset County should disappear come October. That's when the county goes on line with its new communication system and mobile command post funded by homeland security money. The upcoming changes will allow dispatchers to talk across different radio systems.

"That will take care of our interoperability in the county," Gunzelman said.

But the lapses that led to the deaths of the Davis children will not get an official review.

Gunzelman said that the operations of the fire companies fall outside his authority.

Somerset County Prosecutor Wayne Forrest said his office is charged with conducting criminal investigations, which did not apply to the fire. Part of the lack of clear authority in this case lies in the fact that there is no chief public-safety officer in Somerset County, he said.

Cullen and Silverman, would not discuss in detail the Staybridge fire's effect on firefighters.

Commenting in general, Silverman said, "Every time there's a devastating or fatal fire it takes a toll on everyone. Everyone takes it to heart."

Cullen added: "Some people can handle it and some people quit the fire service." But he declined to say whether anyone left either company.

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Types of PSAP Configurations To Be Examined:

The following examination with deal with four general types of PSAP configurations for Montgomery County:

- One, countywide, all service, all agencies willing to participate, consolidated 911 PSAP and dispatching center.
    - One version owned/managed by an existing entity, the Sheriff's Office
    - One version owned/managed by a new shared power's entity
- Several regional (sub part of the County), all service, all agencies willing to participate, consolidated 911 PSAPs and dispatching centers.
    - One version with several joint powers entities being formed, each owning and managing their own regional PSAP.
    - One version with all regional PSAPs being owned/managed by one larger entity but operating several regional "branch PSAPs" under that one umbrella.
        - Variations on the above themes with separate secondary PSAPs for fire/EMS where desired.
- A general continuation of the current configuration (as many as 17 PSAPs), but implementation of "virtual consolidation" of the technologies and functions with shared, networked and integrated CAD, E911 platform/network and radio systems permitting more seamless and coordinated service delivery and operations, while retaining local control of and payment for dispatching operations.
- A general continuation of the current PSAP configuration, without any significant implementation of "virtual consolidation" as described above.

Before analyzing each of these configurations, however, it is appropriate that we develop an understanding of the general operational issues involved in how 911 PSAPs conduct their activities, how these current configurations and procedures evolved, and how these issues impact on or are impacted on by discussions of mergers or consolidations. It is also necessary for us to discuss options on how to pay for any of these configurations. We begin this analysis on the next page.

General considerations in any Mutual Dispatch or PSAP consolidation scenario

A. Cost and funding issues:

There are two basic ways to pay for 911 PSAP operations.

- With revenues generated by or on behalf of the entity that operates the PSAP.
- By the entity that operates the PSAP charging the agencies which receive its services according to some formula based on some quantity measurement.

Generating revenues: In most places in the U.S, large portions of the costs of PSAP operations are covered by per line 911 surcharges levied by either the state or the County (and in rare cases, cities). Where the state levies the charges, there needs to be some mechanism for the state to directly pick up some of the recurring costs and/or for the state to distribute these funds back to the PSAP operating counties or cities. As we read Ohio law, it is not permissible for a county or city to levy a 911 phone line surcharge from which it would receive any direct revenues. (The current 12 cent and 15 cent surcharges in Montgomery County go directly to the phone companies).

In 2005, for a limited time period (unless extended by the legislature) a 32 cent surcharge was levied on all billed cell phones in Ohio with the proceeds going to the State, and then a portion of those proceeds earmarked to be sent to the Counties for their use and distribution to first pay equipment costs for implementing Phase 1 and 2 wireless E911 services, and after they are paid for, the funds can be used to support operations. This funding is scheduled to end after 2008, unless extended, and Montgomery County should get around $1 million per year from it.

Absent the legal authority to implement a direct remittance 911 surcharge on wired or wireless phones in the County, some other mechanism(s) of revenue generation would need to be identified.

As we saw in our look at nearby Champaign County, they recently asked, and their voters approved a 1 mill countywide level for the implementation of one countywide emergency communications system and PSAP. If, for example, $7.5 million were needed per year to fund the total annual operating costs of a single Montgomery county-wide PSAP, according to data provided by the Montgomery County's Auditor's Office it would require a 0.75 mill levy, countywide to raise $7.7 million per year. Further (according to the Auditor's Office), said mill rate levy on a "typical $100,000 house" (after various reductions and other factors are figured in) in the County would cost the property owner *about* $23.00 per year, or about $1.92 per month.

Obviously if more money were needed per year (for example to fund the operations of several regional PSAPs) the math to determine the mill rate required for those higher funds would follow the same proportions. Similarly, to the extent that the property tax generated funding requirements could be reduced by either reducing the operating costs or by coming up with some other source of funds, this mill rate could go down.

A possible source of revenues to fund PSAP operations outside the property tax suggested above could be a legislative continuation of the current wireless 911 surcharge at the current rate of 32¢ per device per month or at some other rate. If such a consideration were to prove to

be a viable option (we do know that several members of the Ohio 911 Council are actively considering it) it is always possible that certain "hooks" or "incentives" could be included in said legislation to entice Counties to move in a direction the Legislature would like to see them move.

Hypothetical scenario: Let's assume the Ohio Legislature and Governor has the view that all levels of local government in Ohio are less well coordinated than might be their vision of ideal. Let's assume they think this lack of coordination costs taxpayers too much money. Let's assume they would like to cause for these local governments to "become better coordinated", but they are reluctant to "mandate" it without offering some money to assist in the carrying out of their mandate. One way they could achieve this goal would be, for example, to:

1. Make the wireless 911 surcharge permanent, at whatever rate (below).
2. If a county does no further 911/egergency communications coordination or PSAP consolidation, the rate stays @ 32¢
3. If a county creates a "countywide emergency communications coordinating authority" and develops a plan (to be approved by the 911 Council) for coordinating some aspects of emergency communications their rate can go to 50¢.
4. If a County implements a PSAP Consolidation plan (or is already structured in such a way) whereby no primary or secondary 911 PSAP in any county serves less than 35% (very subject to debate) of that's county's population, then their rate can go to 75¢.
5. All of these collected wireless surcharge funds would be remitted to the State (the wireless carriers would insist on that), and the State would then keep something like 1-2% to fund statewide 911 coordination efforts, and distribute the balance to the qualifying counties according to the formula set forth above.

Under such a system, if Montgomery County is going to receive about $1 million per year at the 32¢ rate, then at a 50¢ rate the County would get about $1.56 million per year, and at the 75¢ rate, the County would get about $2.4 million per year.

Obviously, if the County could generate as much as $2.4 million per year from this other source, then the need for all $7.5 million (from above) in property taxes would go down significantly, resulting in a mill rate more like 0.51 mills, which would cost the $100,000 homeowner more like $15.64 per year, or $1.31 per month.

Wireless 911: An Inherently logical funding source**:** As has been clearly demonstrated throughout this report, wireless phones and their impact on 911 in particular and emergency communications in general has been huge:

- Without wireless 911, we would still be able to selectively route 911 calls with pinpoint accuracy direct and initially to PSAPs serving the smallest of land mass jurisdictions and not need to consider PSAP consolidations so as to create larger geographic service areas so as to reduce the need to transfer 911 calls.

- Without wireless 911, we would not have general 911 call volumes anywhere from 45% to 75% higher than they were for the same service area and population 20 years ago.

- Without wireless 911 we would not have 911 call processing times (which take more operators and more lines) that are 25% longer than for wired 911 calls, due the lack of address information being provided with the call.

Given these factors, it seems appropriate to expect the users of wireless 911 phones to pay their fair share for the impacts their technology has placed on local governments.

Some cost and funding equity issues:

In virtually every other state, 911 surcharges paid by both wireless and wired phone service subscribers are far higher than either Montgomery County's 12/15¢ wire line or Ohio's 32¢ wireless surcharges.

None of the above referenced surcharges would amount to more than $2.00 per month, or the equivalent of four calls from a pay phone (and with cell phones, the public is already saving that money).

Charging Fees to Served Agencies: The alternative to implementing a tax based revenue generation and collection system is to develop a system for charging fees to the agencies who receive the services of a 911 PSAP or system and have those fees cover the operating costs of the organization.

On the surface, this sounds inherently logical and practical. However, past experience has proven to us that it is fraught with balancing and fairness issues. Let's assume that our above scenario of a county-wide consolidated PSAP having a total annual operating budget of $7.5 million were to be true. Our task then would be to figure out via what means, by counting what activities, the administration of this one PSAP would charge out this $7.5 million to the users. Several options have been identified and implemented (in varying degrees) around the U.S. Some of them are:

A. Charge on a "per call" basis to the jurisdiction in which the incident occurs.
    a. Per phone call from the jurisdiction (based on 911 ALI?)
        i. What about wireless 911 calls with no ALI address?
    b. Per "call" (incident) dispatched to responders serving that jurisdiction?
    c. Per task performed for the field units of that jurisdiction?
        i. What about incidents like multi-jurisdictional pursuits or fire/police mutual aid incidents involving multiple jurisdictions?
B. Charge on a per capita basis
    a. $X per year per resident in that jurisdiction's population
        i. What if it's a low population jurisdiction that generates lots of 911 calls, such as a jurisdiction with a heavy concentration of accident-prone freeway interchanges?
    b. Assumes that more people means more calls and more PSAP activity without regard to crime rates, fire rates, age (medical emergencies) etc.
C. Charge on an assessed valuation basis.
    a. If jurisdiction XX comprises 13% of the total assessed valuation of all the jurisdictions served by the PSAP, then that jurisdiction would get billed for 13% of the total PSAP operating costs.
D. Charge on a number of "radios serviced" basis
    a. Presumes that the more radios a jurisdiction has being talked to by the PSAP, the more work the PSAP would have to do for that jurisdiction, and vice-versa.

i. Penalizes agencies that (for example) choose to have a portable radio for every police officer to wear, even off duty.

E. Some hybrid formula based on elements of the above
   a. We have seen models where they take the entire PSAP budget and divide it in half. The 1st half gets shared by the using agencies on the basis of their proportion of the PSAPs total served population. The second half of the budget gets shared by the using agencies based on their share of the proportion of the total assessed valuation of the PSAP jurisdiction.
      i. We have even seen situations where, because the serving PSAP is located in one of the participant agency's building, it is assumed that said agency gains some intrinsic value or added service by having the PSAP in their building and that value is assigned some arbitrary percentage of the total PSAP operating budget, which is then removed from the "portion to be shared" and must be paid in full by this benefiting agency.
         1. Example: PSAP budget is $1 million. PSAP is housed in Agency X Police HQ. It is negotiated that having this PSAP in that building has a benefit to Agency X of $100,000 per year. That's 10% of the PSAP's budget. Therefore, only $900,000 of the PSAP's overall budget is then shared by all the participant agencies (along whatever sharing component is chosen from the above), with Agency X paying their "fair share" of the $900,000, as well as paying 100% of the $100,000 allocated to the benefit they derive by having that PSAP in their building.

One of the more vexing issues we have encountered in attempting to apply many of the above scenarios is the issue of fairness, and trying to avoid "double taxation". We think this example may make the point:

> *A party lives in Montgomery County. As such that party receives some direct or indirect benefit from the existence and operations of Sheriff's Office. For those services, X% of the Party's 18.24 mills paid in County general levy goes to the Sheriff's Office.*
>
> *That party also lives in the municipality of Centerville. Centerville has chosen to have its own police department and not rely on the Sheriff's office for direct patrol and call response services. The Centerville resident still has to pay the County's 18.24 mill general property tax levy and no "discount" is provided for not requiring direct services from the Sheriff's department, and the party still has to pay Centerville for having its police department via whatever mechanism Centerville chooses. Centerville police also chooses to use the County purchased and County maintained multi-million dollar trunked radio system, for which they pay the county less than $6.00 per month per radio.*
>
> *Living in Centerville, the party is served by the Washington Township Fire District for fire and EMS services. They pay for this fire service in whatever manner the WTFD uses to collect their revenues.*
>
> *Now, under today's scenario, when this party calls 911 from a wired phone to report a fire, their call goes to the Centerville PD for initial answering. If they call 911 from a cell phone while driving down I-675 it may be answered by the MCSO PSAP. In*

either case their 911 call reporting this fire has to be transferred to the WTFD PSAP for dispatch of response units.

***ISSUE:** Under the above cost sharing scenarios, if there were to be a single PSAP serving this Centerville area, how should the above incident be "charged back"?*

- *If done by population served, the charge could go to Centerville (even though they don't choose to have a fire department) because they would probably also assign police to respond and assist with traffic, because it occurred in Centerville. Or it could go to both responding agencies. But what if a County deputy were required to assist with traffic on the I-675 incident? Or it could be billed to Washington Township FD alone because it is a fire.*
- *If done by "calls" (meaning phone calls here), which agency gets the charge?*
- *If done by assessed valuation, which agency's assessed valuation total do we use, Centerville or Washington Township FD as a whole?*

It is for reasons like those depicted above that we have become very much inclined to recommend tax or surcharge based methods of most equitably generating all of the revenue required for such operations from the largest and broadest tax base (to reflect the true migratory, mobile and highly mutual aid based nature of today's emergency communications environment) in a County, and we think that either the county general levy or wireless surcharge models discussed above would fit that bill.

Alternatively (although we think it would be a very tough sell in the Ohio Legislature and would receive major push-back from the traditional telephone company lobbies - albeit somewhat hypocritical since they have acquiesced in most other states) we think it would make the most sense for there to be **parity in wired and wireless 911 surcharges**, and if the legislature were to agree to extending the wireless 911 surcharge beyond 2008 (with or without the staggered fees discussed earlier) it would be very logical for them to permit counties to levy direct 911 surcharges on wired phone lines with proceeds going directly back to the County at exactly the same total rate that the legislature permits on wireless phones. This means that if the phone company's current surcharge collection for 911 in most of Montgomery County is 12¢ per line per month, and if the legislature were to extend the wireless surcharge at even today's modest 32¢, then such an action would permit the County to directly levy and directly collect the difference between 32¢ and 12¢, or 20¢ per wired line per month.

How much money could a wired/wireless county 911 surcharge raise? Data we have developed in recent projects indicate that in a population similar to Montgomery County's, it would be reasonable to expect to see 1.1 surcharge eligible wired and wireless telephones per person. At a population of 592,000, that would translate to 651,200 surcharge eligible devices. If half of those devices (325,600) were wireless, and they were charged 32¢ per month, that would equal $1,250,000 per year. If half of the devices were wire line (325,600), and they were charged 20¢ (as calculated above), they would generate $781,440 per year, for a combined annual total of $2,031,440.

If the wireless surcharge were raised to 75¢, with the wire line add-on, therefore, set at 63¢, these proceeds would be $2,930,400 and $2,461,536, respectively, for a combined total of ***$5,391,936 per year***.

Clearly, these are rough estimates. The wireless carriers (for competitive reasons) are very reluctant to release subscriber count numbers for any geographic area. And in Ohio the wired carriers do not submit any 911 surcharges to the State or counties and cities, so there is no audit trail of how many wired lines on which they are levying their 911 surcharges. In many states they have a long track record of knowing wire line subscriber counts and being able to guess at wireless subscriber counts by "doing the math backward" from what they get in wireless 911 surcharge proceeds. And because we have worked with these various numbers in many areas of the U.S., we are pretty comfortable with our 1.1 devices per person factor.

B. Operational issues:

In 1976, the USA's first Enhanced 911 (E911) telephone systems were demonstrated in Alameda County, CA and Orange County, FL. *(The City of Chicago also had an early version of E911, but it did not involve selective routing to a variety of different governmental PSAPs*) In addition to the obvious advantages of providing **A**utomatic **N**umber **I**dentification (*ANI – the phone number of the calling phone is displayed for the answering 911 dispatcher and precedes the call through the network, unlike today's Caller ID – which follows the call on the 2nd ring*) and **A**utomatic **L**ocation **I**nformation *(ALI – which provides a data screen for the answering 911 dispatcher revealing the address from which the call was placed, the subscriber's name, and the ID of the appropriate police, fire and EMS responders to that address)* with the 911 calls, E911 also provided the critical capability to **selectively route** E911 calls to the PSAP determined to be appropriate for the address from which that E911 call was being placed.

This literally meant that if a County or City boundary went down a given street, with callers on the East side of the street being in Jurisdiction A and those on the West side of the street being in Jurisdiction B, 911 calls from the East side could be routed directly to Jurisdiction A's E911 PSAP, and those from the West side could be routed directly to Jurisdiction B's E911 PSAP, even if these callers were served by the same telephone exchange central office.

This single fact made E911 a viable option and its acceptance has swept across the USA, despite no federal mandates and no (or minimal) federal funding assistance.

How E911 has been implemented in individual jurisdictions has varied greatly across the USA. Specifically, the issue of which level of local government would implement E911 was the 1st question that needed to be answered.

In many cases, the early adopters of E911 were major urban cities, without their surrounding County or suburbs participating. Their suburban city counterparts in implementing E911 often followed them, sometimes by many years

The key point in this historical development discussion is that the agency that became an E911 PSAP was almost always that same agency that provided police and fire dispatching before E911. In other words, if Community A operated its own police and/or fire dispatch operation prior to E911, it most often continued to provide that service to themselves after E911 and became an E911 PSAP.

By not having to face the often difficult political questions of which police, sheriff, fire or ambulance dispatching operations would have to be selected to ***"get out of the initial***

emergency call answering business", E911 planners were able to avoid these politics and concentrate on making the technology of E911 work.

For this reason, there are numerous cases in the USA where some very small police, fire, ambulance and even sheriff's departments retained their relatively cost ineffective dispatching operations and became E911 PSAPs. We know of many Police or Sheriffs departments serving populations of less than 5,000 that continue providing E911 PSAP services today.

This is not to say that there are not areas where the hard issues of "PSAP consolidation" were not examined and even resolved (partially or fully) prior to the implementation of an area's E911 system. But it was certainly the exception.

To summarize, one of the reasons Montgomery County now has fourteen primary and three secondary PSAPs is mostly historical. Those agencies that provided 7-digit "emergency call answering" and police dispatch services tended to become today's E911 PSAPs. These entities have done nothing "more wrong" than most others in their historical progression to this point, with respect to the number of 911 PSAPs in the area. ***However, these arrangements (and the attendant immature wireless 911 planning and implementation activity in Ohio in general – and in Montgomery County in particular) have tended to create an overly complex and fragmented emergency response system in Montgomery County, and one which does not always serve the residents, businesses, visitors and taxpayers as efficiently or effectively as it could.***

There was also a significant set of non-telephone system technical issues that surrounded these decisions as well. These issues related to public safety two-way radio systems. Around the mid 1970's the concept of "walkie-talkies" for public safety agencies first arose. Although these hand held radios became a backbone of the movement to *"get cops out of their cars and on the streets, in the parks and in the schools",* it was not without a technical price. Before a low power hand held radio could be effective it had to:

a.) Be able to hear the dispatcher when the dispatcher needed the officer, and
b.) Be able to get its radio signal back to the dispatcher so the dispatcher could hear the officer.

Generally, the existing radio systems serving countywide organizations in 1976 (like Sheriff's departments) were not capable of serving hand held radios (except, perhaps near the Sheriff's office in the County seat). Therefore, since the local police department probably already had its own small area radio system for its limited jurisdiction land area, it became a natural for the local police department to serve as its own dispatch center and be able to serve such portable radios in its own service area.

If, in this environment, it had been suggested that all emergency call answering and dispatching should be done at the full countywide level, it would have required a massive investment in two-way radio repeaters (for signal boosting) and satellite receivers (for picking up weak, distant portable radio signals). Such expenditures were often prohibitive (and not eligible for funding using 911 surcharge proceeds) and it meant that it only made technical and economical sense to have the E911 PSAP be the same agency that already had a radio system that served the local emergency responders. It also meant that one didn't have to try to meld the widely varied operational procedures of two or more agencies into a larger more "monolithic" dispatching agency.

Further, it would also have been a high probability that there may not have been adequate radio frequencies under the technology of those times available within the geography of the area to cobble together a radio system with adequate capacity to serve numerous agencies. This fact is even further exaggerated in major metro areas.

Returning to the general question of the services provided by PSAPs, they can be generally categorized as follows:

- Answering of phone calls (or dealing with walk-in visitors) for public safety responses of an emergency and not so emergency nature.

- Collecting information from these persons about the need, where it exists, its urgency, etc.

- Keeping track of where the jurisdiction's public safety responders are, which responders are available and which aren't, due to their status or other service demands.

- Determining which responder(s) are supposed to handle the incident in question.

- Using some form of communications system to notify responders of the need to respond (paging, two way voice radio, "fire bar" telephone notification systems, fire sirens, etc.) and to where they should respond and for what type of event.

- Collection of data regarding the responders. Who got sent? How many were sent? When were they sent? When did they arrive? What did they do at the scene? When did they leave the scene? When were they back "in quarters", and so forth.

- Provision of follow-up information or services to the responders. Added details provided by the caller or subsequent callers.

- Provision (over the two-way radio) of incident and non-incident related information to field units, such as running vehicle registration checks, driver's license checks, local records checks, etc.

- Receipt (over the two-way radio) of information from field responders or requests for service from field responders. This runs the gamut from "Tell the street department that we need sand at the corner of Main and 1st", to "Advise the State that their stop light at Highway 60 and Main street is stuck on green", to "Tell the Chief that the party he is interested in is now at his place of employment", and so forth.

- Occasionally (more often than not in smaller agencies) serve as clerical staff, typing police reports, doing filing, copying, handing out forms to the public at the front counter, entering data into local, state and national crime and other data banks, etc.

- Serving as the community's "24 hour security desk" performing tasks such as monitoring local security and utility alarms (bank alarm, fire water flow alarms, low pressure alarms in city water supply, etc.), turning on FAA required lights on water and radio towers, serving as the local "warning point" for natural disasters, and even serving as the local "lost and found desk".

- Serving as jail matrons and jailers. Often dispatchers are required to, at least, monitor local jail "lock-up" cells, usually via closed circuit TV monitors, and (if they are females) to serve

as female matrons for female prisoners and or female arrestee searches. With the advent of far more robust and capable CCTV systems, this role has been enhanced in many PSAPs and expanded to include monitoring traffic cameras on the street, security/safety cameras in public and not so public spaces, and even monitoring "gun shot capture" audio and video systems in high crime areas.

The above list covers the range of services that need to be provided by somebody at or for some to many public safety agencies.

IMPORTANTLY: If these services have historically been provided by the 911 staff, and if those employees are no longer going to be there (though PSAP consolidation), then plans need to be made for the continuation or abandonment of these services, on a local option basis.

C. Radio Communications Issues:

The following attributes define an effective public safety communications radio capability:

• There must be an effective radio system available to the dispatcher for contacting any and all of their field responders, at any time, under any conditions with a very high degree of reliability. This generally means a good transmission system with good signal strength providing high quality audio to vehicle mounted radios, hand held radios in at least 97% of the jurisdiction's land mass, with special attention to high risk and/or high traffic volume areas and inside standard construction buildings. *(Virtually no radio systems provide 100% coverage over and/or in 100% of the areas or buildings in any area -- or at least nobody can afford to build such systems!)*

• Similarly, there must be the ability for the dispatcher to receive (hear) transmissions from all field units, all types of field radios, in all or most of the areas of the jurisdiction's land area.

• There should be the ability for the dispatcher to communicate directly with all other PSAP agency's dispatchers from which they might require assistance, support, and coordination or back-up services.

• There should be the ability for the dispatcher to communicate directly with the field units and control points ("dispatchers") for any agency within their jurisdiction that they might need to direct or coordinate. Typically this means public works agencies, ambulances, transit agencies, etc.

• There should be the ability for field units from the jurisdiction to communicate directly with other field units from their jurisdiction (any type of agency within their jurisdiction), as well as any other field units from any other jurisdiction with whom they may have the need to coordinate.

• There should be the provision for adequate communications security so that sensitive information can be exchanged over the two way radio without jeopardizing the effective management of public safety incidents or violating relevant provisions of the federal "HIPPA" law. .

• There should be adequate "talk path capacity" (means adequate radio channels in conventional technology radio systems or "talk groups" in trunked radio systems) so that no

field unit needs to wait more than a few seconds for the ability to access the system for important information. *(If this relates to field units talking to dispatchers, it is also a function of how many dispatchers there are on duty with the time to listen to the field unit. Having 10 radio channels available to a field unit, all of which can theoretically be heard by the dispatcher, but having only one dispatcher on duty at that instant, and that one dispatcher being kept busy listening to traffic on another radio channel means that there is not adequate "talk path capacity").*

• The communications resources (talk paths) and operations must be arranged and melded to meet the objectives of maximizing the efficient use of these talk paths, in line with operational requirements and preferences. This point relates to the question of how many functional radio "channels" there should be, how many different and discrete radio "channels" a given dispatcher can handle and how these issues relate to how the agencies on these channels work (or don't work) well together.

In early 2006, RCC Consultants completed a Communications Interoperability Engineering Study for Montgomery County. The following excerpt (shaded) is from their report, and it appropriately characterizes the radio environment ion the County today.

3. 1 Montgomery County:

In 1995, Montgomery County government installed a single site, 10-channel, 800 MHz Motorola Type II SmartNet™ trunked radio system, designed primarily for coverage in the downtown Dayton area. Throughout the years, the system has undergone numerous expansions, including:

- Adding three channels from the City of Moraine in 1996,
- Adding two sites, one in the northern portion of the County and one to the south, and upgraded the radio system infrastructure to simulcast to improve coverage,
- Adding five additional channels in 2000,
- Adding a 4th simulcast site in the southeastern portion of the County in 2001
- Adding a 5th simulcast site in the northeastern portion of the County in 2002
- Adding a 6th simulcast site in Brookville ('05) to improve coverage in the County's northwest quadrant
- Adding an Embassy Switch in 2005 to provide additional console capabilities.

Additional planned improvements include:

- Upgrades to the microwave equipment at several sites, and
- Adding a seventh simulcast site in the Germantown area for further improved coverage in the southwestern portion of the County.

Currently, all of the Montgomery County government's public service *(as differentiated from public safety)* agencies utilize the same 800 MHz trunked radio system, as do some of the municipal and township public service departments in the area. These public service agencies, such as road and street departments, sanitary departments, water departments, etc. are crucial responders in the event of a large-scale disaster. In total, the Montgomery County system currently operates 18 voice channels and 3 data channels and supports approximately 3000 radios. The majority of portable radios in use are Motorola MTS 2000. In addition to the County Sheriff's office, the County's trunked 800 MHz system is also used to dispatch Riverside PD, 5 Rivers Metro Parks PD, Butler Township PD, Clay Township PD, Clayton PD, Phillipsburg PD and Jefferson Township Fire.

3.2 City of Dayton

The City of Dayton public safety radio system was initially installed in 1984. It is also a Motorola SmartNet™ 800 MHz trunked radio system. Also, similar to the County system, the system has been expanded several times

and is now a SmartNet™ Type II 3-site simulcast system. The City operates a site in downtown Dayton, a site on a water tank near the airport, and a site toward the southern portion of the City. The system also incorporates 4 receive only sites for improved reception from portable units. In total, the City of Dayton system currently operates 17 voice channels and 3 data channels and supports approximately 2400 radios, including about 225 MDTs. The majority of portable radios in use are Motorola MTS 2000. In addition to the City agencies, the Dayton system is also used to dispatch Riverside Fire and Trotwood Fire.

Overall, these two interoperable, 800 MHz trunked radio systems are either accessible by or used on a daily basis by the following agencies:

COUNTY SYSTEM: Sheriff, County Juvenile Courts, Monday Correctional Facility, Trotwood Police, Vandalia Fire, Veterans Admin. Police, Harrison Twp. Fire, Butler Twp. Fire, Butler Twp. Police, Vandalia Police, U S Marshal, Riverside Police, USAR Team 867, West Carrollton Police, West Carrollton Fire, Miami Twp. Police, Miami Twp. Fire, Huber Heights Police, Huber Heights Fire, Huber Heights Road Dept., Miamisburg Police, Miamisburg Fire, Kettering Police, Kettering Fire, Englewood Police, Clayton Police, Clayton Fire, Clay Twp. Police, Phillipsburg Police, Washington Twp. Fire, Washington Twp. Road, Dept., Centerville Road, County Sanitary, County Engineer, County Animal Control, County Prosecutors Office, County Crime Lab, County Coroners Office, County Public Works Dept, County Combined Health District, 5 Rivers Metro Parks Rangers, 5 Rivers Metro Parks Maintenance, Moraine Police, Moraine Fire, Moraine Street, Centerville Police, City of Dayton Police, City of Dayton Fire, Riverside Fire, Trotwood Fire, Ohio State Highway Patrol, Local ODNR, Warren County Sheriff's Office, City of Springboro (Warren County), City of Franklin (Warren County), Clearcreek Twp. (Warren County), Warren County Fire, City of Dayton Dept. of Aviation (Airport), Greene County Public Safety, Miami County Public Safety, All dispatch centers in Montgomery County (I-PSAP talk group), Montgomery County Office of Emergency (MCOEM) and the Dayton Chapter of American Red Cross.

DAYTON SYSTEM: Dayton Police, Dayton Fire, Dayton Streets, Dayton Parks, Regional Hazmat, Dayton Airport, Riverside Fire, Trotwood Fire, City of Oakwood Police, City of Oakwood Fire, City of Oakwood Streets and all entities using the Montgomery County 800 trunked radio system have direct access to the City of Dayton system for interoperability

3.3 Other Systems in the County

The majority of the agencies in the western section of the county operate on non-trunked, VHF (150 MHz) radio systems channels. The table on the next page shows the existing conventional (non trunked) radio systems in Montgomery County. The public safety agencies include Brookville Police and Fire, New Lebanon Police and Fire, Farmersville Police and Fire, Germantown Police and Fire and Germantown Township Police. The following is a brief description of each agency's operation. Brookville Fire Department, New Lebanon Fire Department and Farmersville Fire Department all share and operate on the same frequency. The repeater for the dispatch channel is located in Brookville with an additional satellite receiver site in New Lebanon. In addition, Farmersville Fire Department has two (2) 800 MHz radios (one mobile and one portable radio) operating on the County's 800 MHz system.

Brookville Police, one of the 17 PSAPs in the county, dispatches these three Fire/EMS Departments. The Brookville Police Department also dispatches Phillipsburg Fire/EMS, Brookville Police, New Lebanon Police and Perry Township Police. All of these agencies utilize VHF frequencies. The Brookville Police Department has five (5) mobile and 28 portable VHF radios. In addition, the Department has four (4) portable 800 MHz radios that operate on the County's system.

Germantown Police Department dispatches the City's Police, Fire and Street/Public Work services. Germantown PD also dispatches Germantown Township Police. Germantown uses three main VHF channels, one each for Police, Fire and Streets operation. Germantown Police have 8 mobile and 14 portable VHF radios. In addition, there are three (3) 800 MHz trunked portable radios programmed on the Montgomery County trunked system. Germantown Police is a participant in the Tactical Crime Suppression Unit (TCSU) consortium for its mobile data system. Germantown Township Police are dispatched by the Germantown Police Department on the same VHF

frequency used by the Germantown PD. The Township Police Department also has access to a secondary tactical VHF frequency for operation in a simplex mode. The Department has 12 mobile and 8 portable VHF radios. Montgomery County is currently implementing a 7th site in the vicinity of the township that will enhance the 800 MHz coverage in this part of the county. The Germantown Township Police Department has need for communications interoperability with the following entities: Miami Township (County 800 MHz), Animal Control (County 800 MHz), Preble County Sheriff (VHF).

Table A-1
Conventional Systems in Montgomery County

County: Montgomery **Conventional Systems**

Agency	System Channel Name	Fixed Site Transmitter/Receiver: Transmit Frequency (MHz)	Transmit PL/Squelch Tone	Receive Frequency (MHz)	Receive PL/Squelch Tone	Tower	A (Analog) D (Digital)	R (Repeater) S (Simplex)	% Outdoor Coverage: Mobile	Portable
Brookville Police	Police	155.07	107.2hz	158.91	107.2hz	Brookville	A	R	100	unknown
Germantown Police	Police	155.52	114.8	158.85	114.8	Germantown	A	R	100	unknown
Germantownship Police	Police	155.925	103.5	153.875	103.5	Germantown	A	R	100	unknown
Box 21 (Rescue)	Box 21	155.16	151.4	155.16	151.4	Dayton	A	S	unknown	unknown
Brookville Fire	Fire	151.385	141.3	150.805	141.3	Brookville	A	R	100	unknown
Englewood	Fire	154.13	141.3	154.13	141.3	Englewood	A	S	100	unknown
Clayton	Fire	"	"	"	"	"	"	"	"	"
Union	Fire	"	"	"	"	"	"	"	"	"
Germantown	Fire	155.82	103.5	153.935	103.5	Germantown	A	R	100	unknown
Brookville	Street	154.115	118.8	154.115	118.8	Brookville	A	S	unknown	unknown
Clay Twp.	Road Dept.	156.12	CS	156.12	CS	Clay Twp.	A	S	unknown	unknown
Englewood	Street	159.36	118.8	155.745	118.8	Englewood	A	R	100	unknown
Farmersville	Street	155.13	210.9	155.13	210.9	Farmersville	A	S		
Germantown	Street	153.515	103.5	153.515	103.5	Germantown	A	S	unknown	unknown
Harrison Twp.	Road Dept.	156.12	CS	156.12	CS	Harrison Twp	A	S	100	unknown
Jefferson Twp.	Road Dept.	156.195	103.5	156.195	103.5	Jefferson Twp	A	S	unknown	unknown
Kettering	Street	158.835	123	158.835	123	Kettering	A	S	100	unknown
Miami Twp.	Road Dept.	159.105	110.9	156.075	110.9	Miami Twp.	A	R	100	unknown
Miamisburg	Street	158.745	88.5	153.815	88.5	Miamisburg	A	R	100	unknown
New Lebanon	Street	155.025	151.4	155.025	151.4	New Lebanon	A	S	100	unknown
Perry Twp.	Road Dept.	154.025	151.4	154.025	151.4	Perry	A	S	unknown	unknown
Trotwood	Street	155.715	151.4	158.94	151.4	Trotwood	A	R	100	unknown
Vandalia	Street	153.8	94.8	158.805	94.8	Vandalia	A	R	100	unknown
West Carrollton	Street	155.055	100	155.055	100	West Carrollton	A	S	100	unknown
Brookville Schools	Bus	153.44	103.5	157.605	103.5	Brookville	A	R	unknown	unknown
Centerville Schools	Bus	155.265	103.5	155.265	103.5	Centerville	A	S	unknown	unknown
Huber Hgts.Schools	Bus	155.75	125	155.75	125	Huber Hgts.	A	S	unknown	unknown
Kettering City Schools	Bus	155.205	703Dpl	155.205	703Dpl	Kettering	A	S	unknown	unknown
Miamisburg City Schools	Bus	159.525	CS	160.155	CS	Miamisburg	A	R	100	unknown
Northmont Schools	Bus	155.295	712Dpl	155.295	712Dpl	Englewood	A	S	unknown	unknown
Trotwood City Schools	Bus	155.235	712Dpl	155.235	712Dpl	Trotwood	A	S	unknown	unknown
Valleyview Schools	Bus	155.16	043Dpl	155.16	043Dpl	Jackson Twp.	A	S	unknown	unknown
Montgomery County	COMMON	158.775	151.4	153.74	151.4	Jefferson Twp.	A	R	100	75
Montgomery County	Sheriff "A"	155.415	151.4	156.03	151.4	Kettering	A	R	100	75
Montgomery County	LEERN	154.935	CS	154.935	CS	Jefferson Twp.	A	S	100	100
Montgomery County	Fire Mut. Aid	154.28	CS	154.28	CS	Jefferson Twp.	A	S	100	100
Montgomery County	Emerg. Mgt.	155.805	CS	155.805	CS	Dayton	A	S	unknown	unknown
Regional Transit	RTA BUS	452.8	167.9	457.8	167.9	Dayton	A	R	100	unknown
Regional Transit	RTA SUPVR	452.725	167.9	457.725	167.9	Dayton	A	R		
Dayton Board Education	DBOE	463.35	114.8	468.35	114.8	Dayton	A	R		
Dayton Board Education	DBOE Security	464.95	114.8	469.95	114.8	Dayton	A	R		
Jefferson Twp. Schools	Bus	462.05	146.2	467.05	146.2	Jefferson Twp.	A	R	100	unknown
Madriver School Dist.	Bus	464.775	118.8	469.775	118.8	Riverside	A	R	100	unknown
Montgomery County School	Bus	452.15	114.8	457.15	114.8	Dayton	A	R	100	unknown
New Lebanon Schools	Bus	462.65	114.8	467.65	114.8	New Lebanon	A	R	100	unknown
Northridge Schools	Bus	464.875	94.8	469.875	94.8	Harrison Twp.	A	R	100	unknown
Vandalia-Butler Schools	Bus	463.8	065Dpl	468.8	065Dpl	Vandalia	A	R	100	unknown
West Carrollton City School	Bus	463.285	123Dpl	468.285	123Dpl	W. Carrollton	A	R	100	unknown
Centerville	Police	855.4625	032Dpl	810.4625	032Dpl	Centerville	A	R	100	unknown
Montgomery County	8 ICALL	866.0125	156.7	821.0125	156.7	Sugarcreek Twp	A	R	100	100
Montgomery County	8 ITAC 1	866.5125	156.7	821.5125	156.7	Miamisburg	A	R	100	unknown
Montgomery County	8 ITAC 2	867.0125	156.7	822.0125	156.7	Vandalia	A	R	100	unknown
Montgomery County	8 ITAC 3	867.5125	156.7	822.5125	156.7	Huber Hgts.	A	R	100	unknown
Montgomery County	8 ITAC 4	868.0125	156.7	823.0125	156.7	Dayton	A	R	100	unknown

Over and above the question of the specific technology employed in public safety radio system is the question of how said systems are "organized" for the task of dispatching public safety responders. In general, each PSAP monitors and uses one or more radio channels or "talk groups" to talk to field units on and listen to and answer when a field unit calls in. This arrangement means that the field personnel from each of the above agencies spend most of their shifts tuned exclusively to and are required to pay attention only to THEIR AGENCY'S CHANNEL or TALKGROUP. They are not required to listen intently to their neighbor's radio traffic in the adjoining jurisdiction, and, in fact, doing so may mean they miss out on critical information on their own radio channel.

Most vehicle two-way radios can "scan" the channels or trunked talkgroups not selected for transmit. For example, if an MCSO deputy wanted to monitor the Trotwood Police talkgroup, he/she could "scan" the receive side of the Trotwood talkgroup, while his/her radio is tuned to transmit on an MSCO talkgroup. Since being tuned to the MCSO talkgroup for transmit makes the MSCO talkgroup the "priority channel". If there is traffic on the MSCO talkgroup, the radio will instantly revert to the MCSO talkgroup to pick it all up. However, if the MCSO deputy really wants to "lock in" on something happening on the Trotwood PD talkgroup (for example), or communicate with somebody in the Trotwood PD and selects the T.P.D. talkgroup for transmit, then that MCSO deputy risks missing out on MCSO radio traffic directed to him or her). Note: None of this scanning capability extends to radios in "other bands" such as 150 MHz fire channels, in this 800 MHz radio example.

A basic dispatching configuration issue that would need significant discussion is the issue of **"How many police 'dispatch channels' (or trunked talk groups) should we have?** In many jurisdictions, this issue is driven (largely) by the number of radio frequencies available and their band (VHF or UHF, for example). If the dispatching jurisdiction has only three radio channels licensed (and no more are available in their area), then the most dispatch channels they could have, regardless of the number of dispatchers they might have to staff those channels, would be three. But, in Montgomery County, where the likely radio system for a wide area dispatch system would be the County's trunked radio system, this limitation essentially evaporates. This means that it could be technically feasible to decide to operate and staff 5, 10 or even 15 or more dispatch talk-groups on the trunked radio system, **assuming one had the money for the dispatchers to staff each of these positions.**

On a recent consulting assignment we were working with a large County Sheriff's dispatch operation. The Sheriff's Office had a robust trunked radio system with over 20 channels. Their trunked radio system had been implemented with several dozen talk groups using those 20+ channels. This Sheriff's PSAP provided contract dispatch services to over a dozen municipal police departments in the County. As these municipal police departments had decided to shut down their independent dispatch operations and contract with the Sheriff, the question of what channel(s) or talkgroup(s) the Sheriff's PSAP would use to dispatch that municipal police department needed to be answered. In some cases, the migrating city police department had been using a legacy VHF or UHF conventional radio system, and their move to the Sheriff's PSAP also meant that they would be joining the Sheriff's wide area trunked radio system, as it provided far greater coverage. In other cases, the city police departments had already been full-time subscribers and users of the County's trunked radio system (like several agencies in Montgomery County are today), and they had their own dispatch and other talkgroups on the system and had been using them for their stand-alone dispatch operations. Not surprisingly, since these city police agencies had become accustomed to having their own "private" radio channel(s) or trunked talkgroup(s) when they dispatched for themselves, it was their preference that this continue when they migrated to being dispatched by the Sheriff's PSAP.

Unfortunately, this city preference was agreed to, without any attendant dispatch staffing increases at the Sheriff's PSAP. When we observed at this Sheriff's PSAP we saw the results of this decision. Simply put, there were two law enforcement dispatchers on duty, 24 x 7. Prior to taking on these contracts with the city police departments, the Sheriff's Office had organized their patrol and dispatching functions in a North zone on one talkgroup with one dispatcher, and a South zone on another talkgroup with another dispatcher. This is how such "division of dispatching work" is almost always accomplished, especially when there is CAD and when there are separate 911 call taker and dispatcher positions (two stage PSAPs). But when the several city police departments were added to the dispatching workload, they decided to merely add these separate talkgroups for each city police department to the array of audio outputs that each of the two dispatchers was supposed to monitor and manage. In other words, whereas the North Zone Sheriff's dispatcher had been monitoring and managing between 20 and 40 patrol units (depending on time of day/day of week) on one talk group, with all of those units hearing each other so they know who's got what going on and what the dispatcher is busy (or not) doing, now they have added three more discrete talkgroups to the North Zone dispatcher's headphone earpiece, and none of the officers/deputies on the now four talkgroups are listening to the other talkgroups, nor are they listening to what the dispatcher is saying on those other talkgroups. The result is that the officers/deputies are hearing and talking to the same number of other units that they used to have on their "private" channel or talkgroup, except that said private channel or talk group is now sharing the services and attention of one dispatcher with several other talkgroups. This results in many cases of dispatchers receiving multiple, simultaneous audio inputs, with no way of intelligibly understanding any of them (try listening to four phone conversations in one ear at one time!). Yet, when we observed this (listening in on a trainer's headset) we regularly saw the dispatcher responding to radio calls by using the unit's radio number and saying *"Unit _____, Go Ahead"*. We asked the dispatcher how she could possibly understand that unit's radio number over the air, and/or what the talker had been saying when they called in. Her response was, *"I can't understand, and I don't know what they said. All I can do is look at the trunked radio's unit ID number on the display….that tells me who the last talker was on that agency's private talkgroup, and I then go to that talkgroup and respond, using their unit number and telling them to go ahead. These units are being fooled into thinking I am hearing most everything they say in their transmissions, but I am really not able to do that much of the time*".

Consequently, in any form of merged, mutual or shared dispatch service, retaining separate talkgroups and channels for agencies that have them today would be most comfortable for the field officers. *They would have to change nothing and no habits*. Dayton cops would talk on the Dayton PD dispatch talkgroups(s), MCSO Deputies on the MCSO talkgroup(s), Kettering PD officers on the Kettering talkgroup(s), and so forth. And, this is a technically *possible* arrangement. From a technical perspective, it would not be too difficult for a consolidated PSAP to control of each Police or Fire Department's current conventional repeaters or channels or talkgroups from a new consolidated PSAP location anywhere within the county. That way, the dispatchers could talk to the units from the various agencies on their comfortable old channels/talkgroups. But, such an arrangement could have significant ramifications on either PSAP operations or staffing, or both.

Simply put, it is our experience that having one dispatcher responsible for two or more discrete police radio channels or talkgroups is not effective. We stress police channels, because police channels are a sort of an *"open mike, stream of consciousness"* type of communications pathway, where all officers on their dispatch channel assume that all other officers and all dispatchers on the dispatch channel are paying 100% attention to that channel 100% of the time. This is because when and if an officer has to "bail-out" of the squad car on a fleeing suspect that was just observed running away from a crime scene, and that officer only has time to shout, ***"Squad 21, I'll be in foot pursuit North on Main from Maple on a robbery suspect"*** into the squad car radio microphone, that officer **expects** that the dispatcher on that channel **will have**

heard and will not have been distracted by being busy talking on some other discrete police channel to which that dispatcher is also required to pay "exclusive attention".

This becomes relevant in this study because ***if*** it is assumed that a consolidated PSAP will retain all the current discrete police/sheriff dispatch radio channels in their current usage mode, it will likely mean that there should be at least that many discrete law enforcement radio dispatch positions staffed at all times. This impacts on the ability to implement either dedicated call taker positions or dedicated fire/EMS staff positions, and thusly the overall staffing requirements of the consolidated PSAP, and whether or not all of the potential efficiencies of consolidation could be realized.

From an efficiency (and, we would argue, a street police effectiveness) perspective we would strongly recommend that if any such merged PSAP or PSAPs were to be implemented, that several "Law Enforcement Zone Dispatch Talkgroups" be implemented over which all law enforcement dispatch assignments for given geographical/jurisdictional zones are broadcast for all the involved police agencies. **This could be a major operational adjustment, especially for the smaller agencies**. If a given agency has become used to the dedicated services of one dispatcher, on one channel, handling the work generated by and assigning calls to 3 – 5 police units for that one city, having to now share a radio talkpath with other agencies and have to listen to those other agencies all day, plus having to share a dispatcher's time with those other agencies could be a significant adjustment. On the plus side, however, in so doing it could be argued that the field officers in these agencies would now have much greater situational awareness of what's going on around them in the neighboring jurisdictions with whom they are likely sharing a talkpath and a dispatcher.

C. 911 and 7-digit call handling issues:

Multiple simultaneous 911/7-digit callers.

In any PSAP environment, it is a fact of life that there are occasionally more incoming phone calls than there are hands and ears to answer them promptly. This situation has been somewhat "controlled" by the sheer design of the regular and E911 telephone networks. Specifically, if a PSAP has only 4 incoming 7-digit lines, there can only be four simultaneous incoming 7-digit calls, regardless of how many dispatch staff may be on duty. Further, with E911, not only are there are also a limited number of "lines" serving any given PSAP, but the E911 network in the community also has a finite number of E911 trunks that can carry simultaneous 911 calls from one telephone Central Office (CO) to the E911 network. This is referred to as "network congestion control". Simply put, it means that if there are four E911 trunks from the (for example) Englewood local telephone company central office to the SBC/AT&T E911 selective router(s) serving Montgomery County PSAPs, then not more than four persons using phones connected to the Englewood CO can simultaneously get through to 911. A 5th person dialing from within the geographical service area of the Englewood telephone CO would typically receive a "fast busy" signal indicating that the network is busy.

Having said all of this, any PSAP must recognize the possibility that there might be a flurry of either 911 or 7-digit calls at any instant. Referring back to the earlier discussion on wireless 911, the likelihood of such a flurry (once local PSAPs begin to receive these calls) is now significantly greater than in the past, with the exception, perhaps, of wide spread weather disasters such as a tornado. In the past, for every house fire, car accident or similar local event, there would only be a few wired calls coming in the first few minutes. Now, with wireless, that could easily be dozens.

These issues present significant staffing challenges for any PSAP. In the past, one could look at historical data on call loads and incident loads and make a pretty good educated guess as to how

many operators to have on duty on any given shift. Now, in even the most serene community, if something like an interstate highway runs through or near it carrying dozens to hundreds of persons passing through, with many to most carrying cell phones, an event as seemingly minor as a car spinning out into a ditch during a storm can cause for literally dozens of 911 calls within a very few minutes.

And every single one of these calls must be answered as if each was a new emergency situation. Unfortunately, neither 911 calls nor 7-digit calls have the capability of "pre-announcing" their relative urgency. A ringing 911 line must be presumed at any instant to be the "event of the decade" in that community until answered and determined to be otherwise. **How is an agency that has traditionally staffed its PSAP with one or two dispatchers (and only has work spaces for two or maybe three) supposed to be able to handle such a flurry of activity?**

- **Call handling priorities:**

  In an environment where there are or will likely be more phone calls at any given moment than there are staff available to answer them, it becomes necessary to establish call handling priorities. These priorities should be:

  - Answering ringing incoming 911 calls.
    - *Some PSAPs are putting in separate inbound wired and wireless 911 trunks to create the potential for prioritizing between ringing wired and wireless 911 calls, as well as ensuring that a flood of calls on (usually) wireless trunks will not render the PSAP's equipment over-loaded and unavailable to wired 911 callers).*
  - Answering ringing incoming calls on 7-digit lines that are published as alternatives to 911.
  - Answering ringing incoming calls on 7-digit lines that are published or known as "administrative lines".
  - Answering ringing incoming calls on 7-digit lines that are unpublished or known only to department staff for internal calls.

  Where this can become problematic is when the limited staff on duty need to place callers on hold in order to fulfill the above priorities. One of the more prevalent myths about 911 is that all 911 calls are life-threatening emergencies and cannot afford to ever be put in hold. This is not generally true. The large majority of all 911 calls, while often requiring prompt attention, would certainly not be harmed if the operator had to place them on hold while quickly answering another equally high priority line. Simply put, it is not usually a problem for a 911 operator to place a 911 call on hold momentarily, grab another ringing 911 line and quickly ask ***"911 is this an emergency?"*** and if the caller says "no", then either ask the caller to "please hold" or to call back on the non-emergency number, and then return to the original call. A competent 911 operator can often handle 2 or 3 calls at essentially the same time, provided none of them are of the medical emergency or "crime in progress" type of call.

  When this becomes a problem is when the call answering tasks have to compete with in-bound radio traffic or data inquiries. One of the recurring themes we hear when we analyze the satisfaction of public safety field personnel (particularly fire fighters) with their dispatching services is along the lines of: "*Why is it that when I call in on the radio, the dispatcher(s) often don't answer me promptly….they are always over on the other channel paying attention to the _____(pick your other agency, police, fire or EMS) or on the phone talking to someone about some _____(pick your other agency, police fire or EMS) problem. Don't they understand that I am out here in the real world and I need a response right away?"*

This phenomenon is often inherent in what is called **"one stage consolidated dispatching**". Here, the term "one stage" refers to a dispatching system where the on duty dispatch personnel are all (generally) equally responsible for answering incoming phone calls and dealing with two way radio traffic, counter traffic and/or running data checks such as driver's license checks and so forth. The term "consolidated" is used here to refer to a PSAP which provides direct and total services to a variety of response agencies, usually law enforcement, fire and EMS.

The problem is often more apparent in "cross service" dispatch centers. ***By this we mean it is most often a problem with fire service and/or EMS personnel feeling that dispatch staff that they perceive as "paying more attention to law enforcement personnel and issues" is slighting them.*** This perception is somewhat to be expected, since the vast majority of the workload carried by these consolidated "cross service" dispatchers is law enforcement related. *(Note that in police-fire-EMS consolidated PSAPs, the ratio of police events dispatched to fire and/or EMS events usually exceeds 5:1, meaning that over 80% of the events dispatched were police events.)* Further, since dispatchers are regularly inter-acting with law enforcement personnel 24 hours a day, and only dealing with fire and EMS personnel on those relatively rare occasions when they have been dispatched to a call, it would be understandable for them to identify more with law enforcement. Add to this the fact that in most cases in the USA (and certainly in Montgomery County) these dispatchers are most often employed by, wear the uniforms of, work under the supervision of, and usually in the physical space of the law enforcement agency.

None of this is said to minimize the frustration that is felt by a fire fighter when they are trying to get an answer on the radio from a dispatcher, unaware that the dispatcher is on a phone call that does not lend itself to being placed on hold, or on another radio channel *(that the fire fighter is not listening to or aware of)* handling what may be an equally important transmission. It is said, however, to develop an understanding of the foundation of some of these complaints and how they are often the result of "systems issues" brought on by too few dispatchers, handling too many simultaneous tasks, with equipment that does not facilitate "multi-tasking" (such as radio console/telephone headset interfaces), and for agencies whose mission is sometimes in time conflict with other agencies, rather than an intentional act of a dispatcher "ignoring" a field unit.

In most cases, where staffing is adequate and systems are appropriate, many of these issues can be resolved by:

- Assigning individual dispatch staff to discrete tasks as in:
    - Only answering the phone
    - Only dealing with law enforcement on a law enforcement radio channel
    - Only dealing with fire/EMS matters on appropriate radio channels.
    - Implementing "Two Stage Dispatch" under which one group of staff only answer incoming phone calls, and another group of staff only do radio work, for both law enforcement and fire/EMS or for these services independently.
    - Implementing and/or fully utilizing technology solutions designed to relieve a large portion of radio work for dispatchers. Mainly, these are Mobile Data Terminal (MDT) systems interfaced with Computer Aided Dispatch (CAD) via which responders can perform their own data inquiries, receive detailed information on dispatches, and update the CAD system as to their arrival at events, clearing from events and so forth. Without full and effective use of MDTs and CAD, all this activity has to be done over the radio, commanding dispatcher

time and attention and radio channel time. Montgomery County has significant implementation of MDCs in law enforcement.

- Implementing simple technologies such as effective telephone-console-headset interfaces which essentially allow a dispatcher to talk on the phone and radio at the same time, without the listeners on either end knowing that they are doing both tasks at once.

- **7-digit calls and calls for local agency personnel (during and after hours).** One of the issues in considering the "shutting down" of any given PSAP and the assumption of that PSAP's "dispatching tasks" by some larger "consolidated" agency is ***what to do with those 7-digit calls***? As we see in the data regarding the current PSAP's activity levels, there are lots of 7-digit phone calls answered in PSAPs. For example, in the Dayton P.D. PSAP they determined that they received 258,610 such calls per year, or an average of 709 per day. The Montgomery County Sheriff's Office PSAP handled 213,491 calls on 7 digit lines last year. That means that for every one 911 call answered at the DPD and MCSO PSAPs, there was another one call on their seven digit lines. For the entire County, our data collection indicates that are about 1,848,544 total 7 digit and 911 calls answered in PSAPs in the County each year, and of these, about 32% (593,644) are on 911 lines.

911 PSAP Agency	# 911 calls	# 7 digit calls
Brookville Police	4,848	34,712
Centerville Police	5,309	85,775
Dayton Police	105,757	258,610
Dayton Fire	30,389	60,048
Englewood Police	13,379	68,400
Germantown PD	3,150	25,462
Huber Heights PD	5,164	58,040
Kettering Police	14,277	82,000
Kettering Fire	0	5,500
Miami Twsp. PD	10,008	57,426
Miamisburg Police	10,684	128,339
Montgomery S.O.	368,326	213,491
Moraine Police	5,040	40,000
Oakwood Pub. Saf.	1,341	27,500
Vandalia Police	4,722	30,108
Washington Twsp FD	0	364
West Carrollton PD	11,250	79,125
TOTALS	**593,644**	**1,254,900**

Note: 911 call counts not provided by WTFD and KFD, although all their 911 calls were initially answered elsewhere, as were the 30,389 reported by the DFD PSAP.

Having said all of this to explain why there are lots of 7-digit calls, there are still lots of 7-digit calls, and if any attempt is going to be made to consolidate any of the 911 call taking and public safety dispatching in the county, it must be cognizant of this fact. Simply put, these 7-digit calls have to be answered by somebody (or system) some place. Generally, it is our experience that it doesn't work well to have an agency's 7-digit non-emergency phone number routed to and answered at a distant 911 PSAP. If it is well established that this is an administrative and non-emergency phone number, then there is very little that the 911 operators at a remote PSAP can do for the caller anyway, other than tell them to hang up and dial some other number. *(Unless*

the Centrex or Centron service offering available from SBC/AT&T were deployed. Under these systems, it would be conceivable for all City and County offices in (for example) Dayton City and Montgomery County governments to have the same telephone prefix, and for calls to be readily transferred from one phone within that system to another phone within that system. Under such a system, at a "remote PSAP" the operators could answer any 7-digit call for any function in the Dayton PD, for example, the Dayton Fire Department and/or the MCSO and transfer it to the desired end person or unit, as if they were all in the same building. This is technically feasible since Centrex and/or Centron services are phone company Central Office based and not based on a customer owned switch [called a PBX] on the customer's site.)

With all of the technology now available in the area of Centrex, remote call forwarding, local number portability, direct inward dial systems with voice mail, automated attendant systems and so forth, we are relatively confident that, on a case by case basis, the proper combination of technology and procedures can be implemented to solve this problem on an agency by agency basis, if there is a will and desire to solve it.

The bottom line here is that if an agency thinks it is going to shut its 911 PSAP down and have somebody else "do 911" for them (so as to *"save lots of money on dispatcher salaries"*) that agency must give serious consideration to this 7-digit number issue. Either some person will have to answer these calls in the local PD, or these lines will need to ring in at a consolidated PSAP, perhaps capable of being answered in a manner tailored to the community, or some electronic system will need to be put in place to receive the calls and at least deliver a *"we're closed, call 911 if you have an emergency, hang up and dial 911"* message. (NOTE: See the later discussion about the experiences of Allegheny County, PA)

Provision of Emergency Medical Dispatch (EMD). In Montgomery County it is occasionally desirable for persons who dial 911 calls to be offered Emergency Medical Dispatch (EMD) procedures and information. This is appropriate and to be commended. It also means that a rather high level of training and certification needs to be in place and enforced.

The important issue with EMD is that if one wants or expects EMD to be available and be provided in an acceptable fashion, then it must be understood that when it is necessary for a 911 dispatcher to be providing EMD, that dispatcher needs to be generally "off line" for answering any further in-bound calls, since EMD events do not lend themselves well to putting callers on hold. This fact means that EMD is difficult to provide in smaller PSAPs with only one or two operators on duty at a time. Further, the frequency of EMD qualifying events is relatively rare, and if the only exposure a small agency's dispatcher would have to providing EMD service were to be a relatively small percent of the already small percent (about 10%) of all calls that are EMS related, their ability to maintain sharp skills needs to be questioned.

D. Dispatch Point Data Collection Issues:

As has been apparent in the preparation of this report, the quality and type of data collected in the several PSAPs regarding activities conducted, time spent on those activities, and so forth is far from perfect. Without good metrics on which to base evaluations of performance and efficiency, it becomes very difficult, indeed, to make sound judgments going forward on hiring, staff deployment, quality control and a host of other aspects of service provision.

Here are a couple of examples:

• A CAD system collects data regarding the dispatch, en route, on scene and clear scene times for all fire units that respond to all events. Later, policy makers need to make a decision on where a new or repositioned fire station should be located. By taking the historical data from the CAD system for all response times within a certain area, it is easily possible to draw time histograms which graphically depict areas where the response time exceeds a pre-set limit, and use that information to make decisions on the best location for a new fire station, so as to improve fire response times. This is an analysis that needs to be done not by the dispatch center staff, but by the planners, administrators and public policy makers for the fire agency in question, but they need to know the data exists, how to interface to it and how to use it. They also need to have been involved in the decisions as to what data to collect, when to collect it (automatically is better), via what means it will be collected, and so forth.

• A police agency wants to adjust their patrol operations to target "hot spots of crime". For this they need to know on a regular basis where police incidents are occurring. This can be accomplished by either having the CAD system available to police commanders in the field or in their stations for ad-hoc "event searches" so as to develop short-term strategies for the next day or the next shift. Or, the CAD system can be linked to the police department's internal records management system such that it would download CAD event "header data" to the police department's records system so that the local PD would have their "own copy" of the data for not only analysis, but to serve as the genesis point for all the reports that they create internally.

Similarly, unobtrusive processes and equipment should be implemented to track 7-digit phone calls handled, and other similar time consuming tasks performed in the PSAP. For example, by having a PSAP's 7-digit phone lines fed into the E911 PSAP workstations, one is able to capture much of the same data regarding date, time, duration, etc. of 7-digit calls as you do for 911 calls. Similarly, if one has the advanced versions of E911 PSAP equipment and the 7 digit lines are terminated on it, the full suite of productivity driven management tools for assessing operator performance, etc. become available. Further, it may also be possible to implement CALLER ID and have that data be a part of any record you could maintain. *(We have even seen PSAPs where the Caller ID phone number is captured and then submitted to the E911 ALI database serving that PSAP and the PSAP gets E911 ALI data when the caller only dialed their 7-digit line. We are not sure this is always a good idea, and are pretty sure that many E911 ALI providers --such as SBC/AT&T in your case-- might not look favorably on doing this, although we think Cincinnati Bell does provide this service in Ohio).*

The bottom line here is that all of this wonderful data that is collected as a part of the 911/7-digit call receipt and dispatch process must be available (within certain parameters) to the field agencies to assist their on-going operations as well.

➲ **RECOMMENDATION: We would like to see whatever consolidated or non-consolidated PSAP(s) that come out of this effort implement a <u>uniform</u> data collection criteria and process so that a consistent set of mutually understood and agreed upon data elements will be collected in a uniform manner, to permit fair "apples to apples" comparisons. Said data should include all relevant PSAP activities, not just CAD events, 911 or 7-digit calls or Ohio NCIC query activity.**

E. Public Access to Public Safety Facilities and Related "Non-dispatching" tasks:

How and when do people get access to the facility or persons at agencies dispatched by a PSAP? This issue is not too different than the issue discussed earlier regarding the answering of 7-digit administrative phone calls. Obviously, if there is somebody working at a police department or Sheriff's Office assigned to answer these phone calls 24 x 7, then dealing with walk-in visitors at that facility should not be a problem, should there not be anyone else in a position to provide that service (receptionist, desk officer, etc.)

However, if it is an agency's decision to shut down their PSAP and to either merge with a neighbor or participate in some form of PSAP consolidation, ***and that agency has historically relied on their 911 personnel to serve in this "receptionist" role***, they will either have to redefine their "walk-in access to the public" policies for the many and varied service requests presented by these visitors, or they will have to replace the 911 staff (serving as "receptionists") with some other either existing or new staff positions.

At a minimum, if a facility has historically provided "walk-in lobby access" 24 x 7, it would be sound practice to at least create the ability for persons who approach this facility to use a "automatic ring down" phone to gain (near the door that would –by then-- be locked) access to that agency's administrative phone system to leave a message or to get into an individual employee's voice mail-box. Similarly, since some of these "walk-ins" are walking in to report some emergency in their car, or on the street or wherever, it would also be good policy to install something like a pay phone (which has free access to 911) to facilitate these folks reporting their emergency or urgent incident.

Building/facility security: How or should a PSAP maintain security at remote public safety facilities? This may well be a new issue to some PSAPs. *Whether or not it is an issue for a given agency depends on the history and practices of that agency.* If a facility has historically served as a PSAP, there is almost always some sort of security in place, to keep the general public from just strolling into the actual dispatch center. But the issue here is that said facility would no longer be a PSAP under a merger or consolidation plan. Therefore, measures and systems that were in place to restrict access into the actual dispatch room will no longer be adequate to restrict access into that entire facility. On the one hand, if the facility in question will continue to be staffed 24 x 7 by somebody, then extending a remote alarm system and/or CCTV to another facility (such as the consolidated PSAP) would not be required.

However*, if the facility will now be without occupants* (except for times when one or more of the field personnel happens to be in the facility) this can become an issue. It can be more significant if one is concerned about security of public safety vehicles and equipment that is usually left outside. *(It would be a matter of considerable risk for someone to attack, damage or place some sort of an explosive device on a police car sitting outside an occupied police facility from which the culprit would fear an immediate detection --probably via CCTV-- and response. However, remove the CCTV monitoring and the threat of immediate response to their intrusion, and it becomes a lot easier and less risky for the culprit.)* How to ensure this security can be problematic, particularly if there are no secure fences or extra lighting present now. In general we would caution against assuming that effective security can be achieved remotely via expecting dispatchers in a remote PSAP to monitor a CCTV picture of a facility, or listen to audio monitoring of that facility. It is virtually impossible to guarantee that this can always be done to the level required to meet that

expectation, since clearly the dispatcher's primary responsibility needs to be answering 911 and dispatching emergency units.

Having said this, facility managers who have concerns in this realm need to assess their particular needs and consider implementing security measures typical to what any other non-staffed facility with a similar risk level would have. This could include garages for at-risk vehicles, high security lighting, high fences with some type of barbed wire on them, CCTV cameras feeding VCRs, and perhaps with motion sensing camera which would trip an audible alarm. Having some form of intrusion alarm for such public safety facilities annunciate at a PSAP is not unacceptable and may be desirable.

Mentioning the monitoring of alarms at the PSAP reminds us that alarm monitoring (both private security and fire alarms as well as "function alarms" for municipal facilities such as sewage lift station alarms) can become an issue that requires attention before any merger or consolidation can take place. Simply put, if nobody will be in the "to be vacated PSAP" to hear and react to an alarm that annunciates there today, what will need to be done to that alarm if there is a consolidation of PSAPs? Electronically, this is usually relatively simple, in that most of these alarms get their signal to the PSAP for the activation of said alarm over leased phone lines feeding that PSAP. Obviously a leased phone line that terminates in PSAP X today could be redirected to PSAP Y (a consolidated PSAP) to serve the same purpose. However, there are widely varying policies and philosophies about whether or not any PSAP should serve as an "Alarm Monitoring Service", sometimes in competition with local private businesses. If a new or consolidated PSAP management decides against monitoring such private alarm systems, then private alarms that are being monitored today by PSAPs to be closed will need to be advised and directed elsewhere for such monitoring. *(Most experts agree that the monitoring of alarms for governmental facilities, especially public safety facilities, at a PSAP is <u>not</u> inappropriate*). Pictured below are some "function alarms" located on the wall in the Oakwood PSAP that are (probably) for sewage lift stations or water supply levels in the community.

<u>Dispatcher involvement in CCTV monitoring, recording and movement around secure jail facilities:</u> As we discussed in some detail in the section on the Centerville PSAP (See the discussion there under "Major difference in this PSAP") for those PSAPs that have or plan to have systems in place that rely on PSAP staff to closely monitor CCTVs, decide what gets recorded from them, and open and close doors and so forth, losing dispatchers from the facility would render use of these systems and processes problematic, at best. It should be pointed out that the vast majority of law enforcement agencies that operate local lock-

ups (not full jails) in their facilities do so in an environment where there are at least two full time staff of some sort in the building, 24 x 7, if the prisoners are ever left unattended. In the vast majority of these cases, these full time staff are dispatchers in the PSAP located there, although that practice is coming under some closer scrutiny from State Corrections Departments, especially when there is only one dispatcher on duty in a PSAP, and that dispatcher is left with the responsibility of tending to the radio and the phones, and also required to pay attention to and (sometimes) respond (out of the PSAP room, away from the 911 phone and the radio) to developing incidents in the cell(s), such as assaults, attempted hangings, etc.

F. PSAP Supervision:

In general, at most of the PSAPs in Montgomery County, there is minimal "on the scene & in the building" 911 professional supervision provided on a 24 x 7 basis. By this term we mean professional supervisors/managers who have made Emergency Communications Dispatching their profession, as opposed to (for example) career law enforcement or fire personnel, regardless of their rank.

In all but the larger 911 PSAPs in the U.S. this is generally the case. And, this absence of real-time, task specific supervision often results in a number of issues, such as:

- Inability to provide real-time performance feedback to dispatch staff
- Inability to provide dispatch staff with adequate (and usually legally required) meal and rest breaks.
- Inability to implement an effective Quality Control (QC) program involving periodic monitoring and review of employee performance.
- Lack of on-the-job training opportunities for working staff.
- Lack of viable promotional opportunities within the agency and within the emergency communications profession.
- Lack of involvement in statewide issues such as the question of requiring “911 Dispatcher Certification” or “Minimum Standards” for 911 dispatchers.
- Lack of time opportunity to participate in external training and/or professional development via supported organization membership.
- Lack of intensive awareness and understanding of developing and pressing industry wide issues and how to manage them. Some examples:
    - Wireless E911 implementation
    - Voice over Internet Protocol (VoIP) 911 access issues
    - Multi-line telephone system access to 911 issues
    - Narrow-banding under 512 MHz by the FCC.
    - Competitive Local Exchange Carrier (CLEC) access to 911 and collection/remittance of 911 surcharge issues.
    - Communications interoperability issues.

It has been our experience that those individuals who tend to be at the center of awareness of and impacting on issues such as these come from PSAP organizations where there is a cadre of professional Public Safety Communications managers and supervisors

G. "One Stage" vs." Two Stage" dispatch configuration:

When one considers the questions of how many 911 dispatch centers there ought to be in Montgomery County and how they ought to be operated, funded and managed one must eventually tackle the question of "one stage dispatch" versus "two stage dispatch".

Definitions:

"One Stage": Incoming 911 and 7 digit phone calls are answered by one or more persons (usually not many more than 4) sitting at workstations where they are each also expected to talk on the radio. After they complete the call (or while it is in progress, depending on its urgency) the phone-call-answering dispatcher then either enters the incident information into a Computer Aided Dispatch (CAD) terminal so that it can be retrieved and then radio dispatched by another co-worker (always in the same room) who shares the CAD system and phone answering duties – or the phone-call-answering-dispatcher immediately proceeds to the two way radio system and radio dispatches the call themselves. In other words, there is no hard and fast "role separation" between those who answer the phone and those who talk on the radio and all can do both tasks from their position and often do either or both.

> *Comment: Some "purists" feel that the best form of combined call taking and dispatching is done when the very person who is in communication with the caller on the phone is also in direct communication with the responders over the two-way radio. Certainly, by removing the need to have the caller's information get entered onto a hand written card or into a CAD system, it can be relayed to the field quicker, and with less loss of nuance and context if it is relayed by the very person who is hearing it on the phone.*

"Two stage": This form of phone call answering and radio dispatching generally flows from the reality that it takes more people to answer phone calls in a large PSAP (since the rate at which they are incoming can't be regulated) than it takes to dispatch these events over the two way radio. Typically one sees a physically separate group of workstations equipped only to answer phone calls and enter events into CAD systems, and then another group of almost always fewer workstations that have CAD terminals (via which to retrieve events entered by the first group) and radio control consoles or terminals to permit talking on the radio system. In these environments, it is rare for the "radio talkers" to talk to the parties on the phone. In some cases this ability doesn't even exist, while in others, the "radio talkers" do have the ability to pick up on and participate in a real "hot call" to both hear what the caller is saying and/or interrogate the caller.

> *Comment: In our wide experience base, we have never seen a PSAP serving as many as several hundred thousand residents that was NOT a two stage PSAP. In other words, if you get so large that you need 'X' radio dispatch positions to manage the 'X' radio channels/talkgroups you use for dispatching for different geographic areas in your jurisdiction, then you will almost certainly need a separate group of call takers. The reasons for this are both operational and technical. The main technical reason is that it is very problematic to attempt to "selectively route" 911 calls within a PSAP.*

In its simplest sense, the smaller the PSAP and the lighter the workload, the more likely it is that a single stage dispatch configuration will be workable. Conversely, the more incoming

calls one has to answer and the more radio positions one has to staff to talk to the responders on the radio, the more likely it is that one will need to implement two stage dispatching. The photos below will illustrate this arrangement in PSAPS of several sizes:

Below: 10 of 14 call taker-screener positions at the Fulton Co. GA (suburban Atlanta) PSAP, where they serve a largely suburban population of 232,000 with a total staff of 86.

Below: Most of the 10 radio dispatch positions at Fulton County,

Below: The 18 call taker positions at the City of Atlanta Police PSAP, from where they serve just fewer than 500,000 residents with a total staff complement of 152.

Below: Most of the 15 police radio dispatch positions on the other side of the above room:

The reader is also referred back to the pictures at the Dayton PD PSAP section to see how the 10 call taker workstations are on one side of the room and the two+ radio positions are on the other side of the divider.

H. "Cross service" vs. "Service Specific" dispatch configuration

This issue relates to the question of whether or not there will be separate police and fire dispatch operations. This "separateness" could be within the same room, within the same facility, or in different parts of town. This "separateness" also relates to the question of whether or not the persons who provide these dispatch services are cross-trained to provide services to both disciplines (if they are dispatched separately) or are they uniquely trained to handle only the discipline they work with.

This has the potential of being a very controversial topic, particularly where there is already a history of the some fire departments having their own, independent dispatch operations such as in Kettering, Dayton and Washington Township.

We have been involved in the "merging" of police and fire dispatch operations, as well as the study of the potential of merging them in several other projects. In every case, it has been very apparent that there are major differences between the role played by and tasks expected of a law enforcement dispatcher and the role and tasks expected of a fire dispatcher. In one sense, this difference can be described as "serial work" versus "parallel work". Here's what this means: In a law enforcement dispatch environment, one (or more) phone calls relating to one dispatchable incident are sent to one law enforcement dispatcher via the CAD system, and that one law enforcement dispatcher does all that is needed to manage the dispatching and "control" of that event. If there are ancillary tasks to perform such as "call the Coroner", that one dispatcher generally handles it, or the agency has set up another radio channel with another dispatcher to which all "requests for subsequent service" are directed, and the field requester needing the service switches to that channel to have their need met by that dispatcher. This is the "serial" process, one item to one dispatcher, largely handed by one dispatcher. In the fire service, if there is a fire incident entered into the CAD system by a generic police-fire-EMS call taker, that one incident is usually presented simultaneously to the CAD terminals of several fire dispatchers, and then those several fire dispatchers process that event "in parallel", using a great deal of teamwork to determine which of them will perform which discrete tasks called for by this particular type of incident.

Another differentiation between the type dispatching roles is that of "creativity" vs. "following the plan". In the law enforcement service, there tends to be far less "pre-incident planning" in terms of detailed plans that dictate how many police cars from what directions should respond to the incident, and which one(s) should go to what position in relation to the incident address to perform what pre-determined tasks. Rather, police dispatch is much more "seat of the pants". It is our opinion that this flows from two basic foundations:

1. Police are deployed as individual or two person units in one vehicle and that one vehicle is a service response unit, all on to itself. But in fire, responders are assigned as "companies", complete with their built-in boss (Captain on that rig) for that incident and most incidents require several companies to respond, and when they respond, their higher boss (Battalion Chief) goes with them, and most responses are conducted in compliance with a pre-fire plan, which has identified, located and categorized hazards, conditions, resources and responders for an incident of that type at that location.

2. Police response incidents almost always greatly outnumber fire response incidents in every jurisdiction. Generally the ratio is around 5 police response

incidents to every one fire incident. As such, it is very frequent for several police incidents to be in various stages of responding/handling at any given incident. As such, the police dispatcher must toggle back and forth between several incidents at about the same time, while the fire dispatcher generally has the opportunity to deal with incidents one at a time. (Except during "task force" operations flowing from incidents like major wind storms, etc. where there a numerous concurrent fire responses in progress).

Having articulated some of the differences in the two roles, we need to point out three important facts:

1. In smaller communities that have their own law enforcement PSAP and their own fire department, the police dispatchers do both tasks and have done so for decades.
    a. This is not to say that these fire departments are always pleased with this arrangement, but they have been given no alternative.
2. In some (an increasing number, we might add) larger cities, fire dispatching has become an integrated part of an Emergency Communications Center and while handled as a separate role and task, it is part of the larger integrated organization and often performed by cross trained staff.
3. In virtually all Sheriff's PSAPs where fire dispatching is done (and it is done in many), it is done for departments that have no organizational relationship to the Sheriff's Office, but it is done by the same Sheriff's dispatchers who dispatch Sheriff's patrol units.
    a. This is not to say that these fire departments are always pleased with this arrangement, but they often have no viable alternative, since many of them are volunteer departments that have no paid staff back at HQ to dispatch for them anyway.

I. Civilian vs. "Sworn" or "Commissioned" dispatch staff:

As was reported earlier, only the Dayton Police Department currently uses sworn or commissioned personnel as their dispatchers, and they use them only in the radio dispatch positions, and not in the 911 call taker positions. The Dayton PD also deploys Police Sergeants Shift Supervisors in Communications and a Police Lieutenant as manager. Dayton fire assigns three Fire Lieutenants as Shift Supervisors in their PSAP, and a Fire Captain as the manager. The Sheriff's Office deploys civilians as dispatchers, and Deputies as Shift Supervisors. All other such positions in the PSAP agencies in the County are filled by civilians.

The topic of "civilianization" of PSAP staff was a very hot topic back in the 1970s. For the most part, however, hardly any police agencies (even as large as New York City, Los Angeles and Chicago) deploy sworn personnel as radio dispatchers and/or call takers any more. And very few fire departments deploy commissioned fire fighters in these roles any more. In fact, in all of our work in this field, we have only encountered commissioned fire fighters as working dispatchers in one PSAP in the U.S. (Amarillo, TX FD).

However, the use of sworn or commissioned personnel in PSAP shift supervisory or PSAP management roles is still fairly common across the U.S., but it is becoming more and more rare with the increase in consolidated, shared control PSAP agencies. In these shared

control agencies, it seems that on the one hand, they have not been able to come to agreement as to which type of "sworn person" should be in control or be the shift supervisor (police, sheriff, or fire) so they decide it should be none, and on the other hand they recognize that the role of managing a shared control, multi-service PSAP in a very high tech field is, perhaps, best left to a career professional in that esoteric field, and not be a career development assignment for a police or fire management generalist "on the way up."

J. "Universal" Call Takers & Telecommunicators vs. "Specialists"

Another general question that needs to be considered when one envisions how a PSAP should be staffed and operated is the question of whether or not the working dispatchers ("Telecommunicators") should be cross-trained in all work tasks in the PSAP, and, if so, cross deployed from time to time. The distinct types of work that PSAP staffs perform, and which some PSAP agencies have chosen to organize and staff under separate job descriptions, often with different pay rates are:

- **911 operator or call-taker**
  - Generally they are trained and deployed to only answer incoming phone calls and enter response incidents into the CAD system.
    - *They can be deployed as "universal call takers" who fully handle all police, fire, EMS and EMD calls through to the point of CAD event entry, or they are sometimes deployed only to receive police calls and enter police response events in CAD. In these cases, they transfer 911 calls requiring EMD or fire call taking to other staff who are either acting as Fire/EMD call takers only, or as Fire/EMD call-taker-dispatchers.*
    - *This category would cover the Dayton PD Emergency Operators.*
- **Police/Sheriff radio dispatcher**
  - Usually these folks come from the ranks of 911 operator, if those job classes are separate in that agency. As such, they are usually also capable of handling incoming phone calls.
    - *This category would cover the Dayton PD radio dispatchers, except that are not generally promotees from 911 operator positions.*
- **Fire radio dispatcher or Fire/EMS radio dispatcher**
  - They are generally deployed to both take transferred 911 calls for fire and/or EMS services and to provide EMD, as well as do radio dispatching for fire/EMS services.
    - *This category would define the Dayton Fire, Washington Township and Kettering fire dispatchers*
- **EMS radio dispatcher**
  - In environments where EMS is dispatched separately (often a private service) there are separate staff to which 911 calls for EMS and often for EMD are transferred.
- **911 Dispatcher/call-taker generalist**
  - These staff are trained in and deployed to handle any and all of the above tasks.
    - *This category would describe the dispatch staff at all of the Montgomery County agencies where police, fire and EMS/EMD calls are received, processed and dispatched.*

K. State laws relating to PSAPs and/or their operations

In some states, the Legislatures have taken a very active role in issues related to the number, management, funding, ownership, technology, procedures and training in PSAPs. In some states the Legislature has taken virtually no interest in these matters. In many states it is a combination of the two environments.

In this realm, there are three areas of particular interest to this study for Montgomery County. These are:

- Legislation regarding who may/must control countywide communications systems
- Legislation regarding 911 surcharges and their usage to fund PSAP operations
- Legislation regarding minimum dispatcher standards or certification requirements.

Of particular interest is the State of Ohio Statute **307.63**, entitled "***Countywide Public Safety Communication System".*** We are inserting the complete text of this statute below (Bold highlights are added by GeoComm to draw the reader's attention to sections of particular relevance):

§ 307.63. Countywide public safety communications system.

(A) As used in this section, "countywide public safety communications system" means a system of communications facilities, equipment, and services that helps to provide immediate field exchange of police, fire, and emergency medical services information between the county and participating states, political subdivisions, and other public entities, without regard to which jurisdiction holds title to real or personal property used in the system or employs the persons responsible to dispatch emergency personnel using the system.

(B) A board of county commissioners may establish a countywide public safety communications system. The system shall be operated in accordance with division (B)(1), (2), or (3) of this section.

(1) In any county with a population of less than seven hundred fifty thousand, the county sheriff shall operate the countywide public safety communications system unless, before commencing operation of the system, the sheriff gives written notice to the board of county commissioners that he chooses not to do so. After the board of county commissioners receives such written notice from the sheriff, the board shall operate the system. Once the sheriff gives notice that he chooses not to operate the system, neither he nor any person occupying the office of county sheriff in the future may choose to operate the system at a later date, except as provided in division (B)(3) of this section.

(2) In any county with a population of seven hundred fifty thousand or more, the board of county commissioners shall operate the system, unless the board and the county sheriff mutually agree that the sheriff will operate the system.

(3) In any county, after the board of county commissioners commences operation of a public safety communications system, if the board chooses to stop operating the system, the county sheriff may operate the system.

(C) The board of county commissioners may construct, acquire, or contract for communications facilities for the public safety communications system. In addition, the board may acquire or contract for computers and other equipment in connection with the system, provide equipment to the users of the system, maintain the facilities and equipment, employ personnel or contract for personal services,

and exercise other powers as necessary to operate the system. The board may adopt policies or rules for the administration, operation, and maintenance of the system. If the county sheriff is the operator of the system, he may employ personnel in connection with the operation of the system.

(D) The board of county commissioners may enter into agreements with this state, political subdivisions of this state, an adjoining state or any of its political subdivisions, or any other public entity concerning the use of the countywide public safety communications system.

(E) A board of township trustees may enter into an agreement with the board of county commissioners pursuant to division (D) of this section.

(F) The authority granted to a county sheriff under division (B) of this section to operate a countywide public safety communications system does not apply in any county where, on and before the effective date of this section, the board of county commissioners is providing public safety communications facilities to, or coordinating the public safety communications needs of, municipal corporations, townships, or other entities or officials by means of officials or with employees not under the direct supervision of the county sheriff. However, if such a board of county commissioners and the county sheriff mutually agree that the sheriff will operate a countywide public safety communications system, he may operate it.

(G) Nothing in this section requires a county sheriff in a county with a population of less than seven hundred fifty thousand to use the public safety communications system to dispatch his employees.

HISTORY: 144 v H 791. Eff 3-15-93.

In addition to State statutes on a particular topic, one should also look at relevant Attorney General Opinions on related matters for guidance in interpreting specific statues. We have found several such Ohio attorney General Opinions, and they are provided as Appendix 1 to this report.

In general, *and* *while we are not qualified to interpret Ohio laws in any definitive manner*, we have arrived at the conclusion that if there were to be a true **countywide communications and dispatch system**, offering 911 call taking and/or dispatch services to any and all public safety agencies, countywide, then "**the county sheriff shall operate"** (quoting from the above statute) said service, unless the County Sheriff were to specifically choose not to do so, and he were to notify the County Commission in writing of that relinquishment of authority.

Recently, we have had discussions with officials in nearby Champaign County (Urbana) where they have just implemented such a "Countywide system" in a county of less than 750,000 (38,190 population). In their case, the Sheriff did agree in writing to the County Commission to relinquish this operating authority, and they have now formed two Boards to provide leadership and control to their countywide communications operation. One if the Fiscal Board, which deals with the collection and administration of a one mill levy their voters passed for this countywide communications system, and the other is the Operations Board which provides direction to the Manager of the Countywide dispatch operation on how to provide the services.

No dispatcher certification:

Our research has not uncovered any significant Ohio legislation regarding particular certification or licensing requirements for 911 dispatch personnel. However, there is some indication that the Ohio 911 Council has been considering working with a legislator to introduce a bill dealing with this and other issues. (Council minutes from 6/26/2006) In some states, there have been laws passed that

require that anyone operating in a 911 dispatch role achieve some "certification" within a certain time frame after their hiring, but that has not yet been done in Ohio. However, there are (and have been for some time) regulations which flow from the FBI and the National Crime Information Center (NCIC) that require that dispatch staff who have access (as most in law enforcement would) to NCIC (and by definition their state counterpart) systems must be "hot files certified", which means they must have received initial training and periodic re-certification in the interpretation of and (in many cases) the entry of records in the NCIC system.

911 revenue collection:

Under Ohio state law (as discussed early on) 911 surcharges on traditional wired phone lines are collected by and retained by the telephone companies collecting them. And, according to PUCO regulations, said surcharges are also supposed to be collected on phone lines serviced by Competitive Local Exchange Carriers (CLECs) in Ohio, although since these surcharges do not get remitted to the local governments in any way, shape or form, one wonders via what mechanism these CLECs are submitting these surcharge revenues to their competitor Incumbent Local Exchange Carriers (ILECs).

In increasing numbers, telephone users are replacing their traditional "land lines" from either ILECs or CLECs with a new type of phone service called Voice over Internet Protocol or VoIP. VoIP comes in two basis forms. The first form is 100% a computer to computer voice connection. In this configuration, Computer #1 "calls" Computer #2 and the parties at the two computers wear headsets with microphones and talk back and forth over the same sort of communications pathway that would carry "instant messaging" from one PC to another on the internet. This mode of VoIP is not a telephone call, per se, and in this mode, neither computer is able to dial any number that is a part of the "public switched telephone network" (PSTN), which includes 911. So how to handle a 911 call in this mode is irrelevant, since such a call can't be placed.

> *Example: A Montgomery County resident has a relative who lives in Africa. Regularly they agree to "meet on Skype™" (a VoIP service) at a certain time on a certain date and they talk for an hour, computer to computer, and it cost absolutely nothing. There is no phone bill on which to add any surcharge*

However, there are at least two other modes of VoIP in which the VoIP user at the PC can actually place a call that enters the PSTN, and the VoIP user at a PC, wearing a headset connected to the PC can talk to a non-VoIP user at the other end of the call who is on a standard PSTN telephone.

> *Example: The relative of a Montgomery County resident lives in Shanghai, China. She is a Skype VoIP subscriber there. She has also paid extra for "Skype-out" minutes, for which she has received a U.S. telephone number with an area code of her choosing. She chose a U.S. number with a 937 area code, which is where most of her family lives. Via this system, she can dial her parents 937 number and the regular Bell Telephone line in their kitchen will ring and they will talk to her from their traditional wired phone to her laptop PC in Shanghai at about 3 cents per minute, which the Skype-out user pays for in advance. Similarly, her parents can call her on that 937 area code U.S. number and her laptop PC will actually ring in Shanghai and she then puts her headset on and answers. There is no U.S. phone bill for this service on which a Montgomery County 911 surcharge could appear.*

And then there is a third variation, where the VoIP service provider (at least on the U.S. end of a VoIP call) provides hardware to their customer which lets their customer connect their standard plug in phone to the VoIP modem, which is then connected to the broadband cable modem or DSL

service. With these VoIP services, subscribers can't enable them in the U.S. until and unless they provide the VoIP service provider with manually entered information that specifies the "911 jurisdiction" in which they will be using this VoIP phone. Once this is done, they can take their VoIP hardware anywhere in the world and dial any number permissible under their service plan with the VoIP provider, and then talk, telephone device to telephone device.

> *Example: The above Montgomery County Shanghai relative purchased Vonage™ VoIP equipment and installed it in her apartment in Shanghai, China. When doing so she was required to go on line and fill out a Vonage subscriber's agreement on which she was required to provide the "911 jurisdiction" information for where she'd be using the Vonage equipment. Because there is no 911 service in China, and because her permanent U.S. residence is in Dayton, OH, she entered her parents Dayton, OH address. Later, at the urging of her father, she placed a "911 test call" over her VoIP equipment from her Shanghai, China apartment. The 911 call would ring into the Dayton PD 911 Center on their 911 trunks, and the Dayton PD's E911 ALI screen displayed the Dayton address she had entered at sign-up.*

These last two examples touch on the technical problems in making VoIP service work properly with 911, but that is not a problem this study is setting out to resolve. Rather, these VoIP examples are used to illustrate two other very important points:

1. That VoIP calls that go through the PSTN are routed to 911 PSAPs based on information provided on-line by some person when they first set up their VoIP service, and if they enter bad information, and/or if they move and don't put in their new "911 location" information, their 911 calls will forever be routed to the PSAP (correct or not) that was first entered by them. This is a very troubling prospect for the long term viability and practicality of smaller jurisdiction PSAPs which cover a limited land area and expect to get their 911 calls correctly routed them based on the address from which the call 911 was placed.
2. That VoIP providers are often and largely outside the regulatory realm of state agencies like the PUCO (they are not, after, telephone companies) and city, county and state 911 surcharges. Some such VoIP providers have voluntarily agreed to collect 911 surcharges, but not all, and there are real problems with validating their subscriber counts and surcharge collections and remittances. And, while it is true that in Ohio (thus far) 911 system recurring costs payable to the phone company have been covered by the phone company collecting and keeping the 911 surcharges they collect, what if those collected 911 surcharge revenues diminish because of a mass movement over to cheaper VoIP services, or away from wired services over to wireless phones, from which the wired phone companies do not collect any 911 surcharge revenues? Certainly, there would come a point in time where the 911 service providing phone companies will have to do something to get the revenue to pay for these expensive services. What will they do?

In this view, it is important that we stress that any revenue program that presumes there will always be some consistent telephone service against which the state, county or some other entity could reliably presume to levy a 911 surcharge (whether its payable to the phone company or the government) may not be a reasonable assumption. In this vein, it may be meaningful to look back to the action taken in Champaign County, when they went to their voters to approve a 1 mill property tax to fund emergency communications, county-wide. That 1 mill countywide levy is a portion of the median mill rate of 62.35 in that county, or 00.16%.

The preceding backdrop of general issues is applicable to the analysis of any type of organizational PSAP configuration in Montgomery County.

In that analysis, the first tier of questions relate to **"How should PSAPs in the County be organized or clustered?"** Earlier, we set forth the following general configurations:

i) One, countywide, all service, all agencies willing to participate, consolidated 911 PSAP and dispatching center.
   (1) One version owned/managed by an existing entity, the Sheriff's Office
   (2) One version owned/managed by a new shared power's entity
ii) Several regional (sub part of the County), all service, all agencies willing to participate, consolidated 911 PSAPs and dispatching centers.
   (1) One version with the regional PSAP being owned and managed by an existing entity which sells contract services to other user agencies.
   (2) One version with several joint powers entities being formed, each owning and managing their own regional PSAP.
   (3) One version with all regional PSAPs being owned/managed by one larger Joint Powers entity but operating several regional "branch PSAPs" under that one umbrella.
      (a) Variations on the above themes with separate secondary PSAPs for fire/EMS where desired.
iii) A general continuation of the current configuration (as many as 17 PSAPs), but implementation of "virtual consolidation" of the technologies and functions with shared, networked and integrated CAD, E911 platform/network and radio systems permitting more seamless and coordinated service delivery and operations, while retaining local control of and payment for dispatching operations.
iv) A general continuation of the current PSAP configuration, without any significant implementation of "virtual consolidation" as described above.

To each of these configurations, we will apply the following analysis matrix:

- ***How does the configuration being examined relate to:***
  - Changes in, improvements to or detractions from overall dispatch operations?
  - Radio communication issues?
  - 911 and 7 digit call handling issues?
  - Data collection issues?
  - Public safety facilities access issues?
  - PSAP supervision issues?
  - "1 stage" vs. "2 stage" dispatching issues?
  - "Cross Service" vs. "Service Specific" dispatching issues?
  - Civilian vs. sworn staff issues?
  - Universal call talker vs. Service Specific call taker issues?
  - State law and regulation issues?"
  - Management and control issues?
  - Cost and funding issues?

The Range of Options:

From "No Change" through "Regional PSAPs" to "Full Consolidation"

Before this analysis goes much further, it is important that we attempt to quantify the range of the workloads and costs that are at issue here: Simply put, each year there are about 1.8 million calls for public safety service (of some level of urgency, which may or may not require or desire a public safety response) placed in the County, representing about 980,000 incidents to which responses are generated, answered by 192.5 people at 17 places, and about 45,000 of them are subsequently transferred elsewhere for fire/EMS dispatch service, all at an overall annual cost of about $13 million.

From the outset, this analysis is framed by two ends of the spectrum. The first end can be called the **"No Change Option"**, under which today's existing 17 PSAPs would continue to operate and cost as they do today, and be funded as they are today. This is often the outcome of studies such as this, but not always. The inertia to keep the status quo can be very powerful, especially when altering it often means job displacement and sometimes layoffs and job loss. It can also be powerful when a significant amount of money would have to be spent to build a new physical facility for a new consolidated PSAP, or to purchase a new integrated trunked radio system or a new integrated CAD system. It is often difficult for local governments to rationalize participation in a controversial, complex and expensive one-time, up front cost of several million dollars to create the opportunity to save (for each entity) a few hundred thousand dollars per year.

To this option we will apply our earlier stated evaluation criteria:

- How does the configuration being examined relate to:
  - Changes in, improvements to or detractions from overall dispatch operations?
    - **No change, no improvement, no detraction**
  - Radio communication issues?
    - **No changes, whatever lack of interoperability exists today would continue.**
  - 911 and 7 digit call handling issues?
    - **No change, whatever call transfers and confusion for the caller that exists today would continue. Conversely, whatever benefits accrue from handling these calls where they are handled today would continue**
  - Data collection issues?
    - **No change. No comparable data collection methods for establishing metrics going forward would exist.**
  - Public safety facilities access issues?
    - **No changes.**
  - PSAP supervision issues?
    - **No changes.**
  - "1 stage" vs. "2 stage" dispatching issues?
    - **No changes would occur.**
  - "Cross Service" vs. "Service Specific" dispatching issues?
    - **No changes would occur**
  - Civilian vs. sworn staff issues?
    - **No changes would occur**
  - Universal call talker vs. Service Specific call taker issues?
    - **No changes would occur**
  - State law and regulation issues?"

        - **Until the State develops any mandatory requirements, no changes would occur.**
    - Management and control issues?
        - **No change**
    - Cost and funding issues?
        - **No change, no funding or cost relief for localities.**

En route to the other end of the spectrum we have placed a variety of configurations that could be tinkered with in a number of ways. Generally, however, they fall into three categories, as follows:

- Creation of one overall managing authority that operates several Regional PSAPs serving clusters of jurisdictions in (likely) adjoining parts of the County.
- Several "Joint Powers" bodies form themselves, each of which would own/operate regional and/or service specific PSAPs for their members.
- Creation of an overarching "Emergency Communications Authority" type entity that would own and operate all the inter-connected technologies (CAD, E911, radio) that would be needed to implement "virtual consolidation" while the public safety response agencies would allow the market forces in their particular jurisdictions to determine which agencies and how many will choose to operate **physical PSAPs**, and for what hours of the day, and so forth.
    - Under this concept, it would be feasible for City X to decide to operate a PSAP (for example) from 8 – 5 Monday – Friday, and not on holidays, and during those times they would initially answer 911 calls intended for them, dispatch police, fire and or EMS from their agency, and when they go home at 5 p.m. they would "flip a switch", and their call taking, CAD event entry and radio dispatching would be assumed by some other entity on a contracted basis, using the same equipment and systems that were used before they closed down for the day.

The other end of this spectrum would be an action by the County Commission to create a Countywide Emergency Communications Coordinating Authority (CECCA), and then that Board could create a single, all encompassing total Public Safety/Emergency Communications organization and facility for Montgomery County. It is this configuration model that we will delve into first.

Full PSAP Consolidation Model(s)

For purposes of this analysis, we will refer to such a service/facility/organization as the **Montgomery Emergency Communications Center or MECC.** As indicated, MECC could take one of two organizational configurations:

- An MECC operated under the authority and control of the Montgomery County Sheriff, as envisioned by Ohio Statute 307.63.
    - The degree to which the Sheriff might choose to delegate any of this authority and control to entities such as a User Executive Policy Board or User Advisory Board (each represents a differing degree of user involvement and control) would be up to the Sheriff.
    - Since there is no definition provided in 307.63 for the term **"sheriff shall operate"**, it would appear possible that such an arrangement could be negotiated with the Sheriff to preserve the concept of control of "operations" while sharing the daily manifestations of said control.
        - Perhaps the Sheriff as the permanent Chair of the Operating Control Board?
- An MECC operated under the authority and control of the Montgomery County Board of Commissioners (after the specific execution of an irrevocable waiver by the Sheriff).
    - The degree to which (quoting 307.63 here) ***"the board shall operate the system"*** (assuming a waiver from the Sheriff) is also open to as much interpretation as is the question regarding what form the Sheriff's "operation" of said system might take.
    - Clearly, the elected County Commissioners are not, themselves, going to actually and physically operate such a system. As such, it would seem implicit that they would have the authority to delegate operational control of such system to some person, board or other similar entity. Could said person be the Sheriff to "operate" such system, pursuant to operational direction from some User's Board?

Based on the above, it would appear that if these "operational control" issues could be negotiated at a local level, the law is sufficiently open to permit application of any reasonable negotiated outcome. On the other hand, if there is contention on the issues, then advisory legal opinions will need to be sought from the Attorney General, or perhaps the Courts or legislative changes will need to be pursued.

Theoretically, if there were to be one large PSAP where all the earlier quantified work was to be done, that PSAP would have to be sized, equipped and staffed to handle some portion of the that workload. The trick is figuring out what portion of that workload would be logical and practical to assume for a single PSAP.

To the extent that the 1.8 million phone call figure contains some 7 digit calls where the caller was looking for local police or fire department information that would be best provided by a business hours call to that local department's 7 digit number, then had those calls gone to those numbers, there would not be 1.8 million calls at the central PSAP. Similarly, to the extent that some of the 1.8 million calls are 911 calls that were transferred from one of today's PSAPs to another one of today's PSAPs, then what is now being counted as two and sometimes three calls would only be one call in a single consolidated PSAP.

NOTE: By way of reminder……many 911 calls for fire or EMS services in the County today end up being counted as two (or more) 911 calls. In Dayton, for example, the 911 call reporting a fire is first answered at the DPD (one 911 call is counted) and then transferred to the DFD (another 911 call is counted). Or, a wireless 911 call is answered at the MCSO reporting a car accident in Centerville (one 911 call is counted). It is transferred to the Centerville PD (another 911 call is counted) where further interrogation determines that it is actually a medical emergency in the car, to which the Washington Township Fire/Rescue unit needs to respond, so the 911 call may be transferred to the WTFD PSAP (where a third 911 call is then counted).

This difficulty in pinning down the finite number of phone calls that could be expected on "day one" of the operations of such a consolidated single PSAP could play a major role in developing the required staffing, workstations and equipment needed for such day one operations. These factors could have a huge impact on the costs of building and equipping the facility, not to mention the costs of having the employees to staff the facility. *Overestimating or overstating these workloads at this point in the exploration process could be harmful to the process, as it could exaggerate the required staff and facility size, thereby making such an alternative look less financially attractive.* Having said this, however, there are no "approved formulas" one can use to apply to today's reported multi-PSAP workload numbers and end up with a close approximation of what the final workloads in a consolidated PSAP might be. In fact, there aren't even many jurisdictions in the U.S. where numerous established PSAPs have consolidated into one large PSAP in a jurisdiction where there is a significant urban core, such as Dayton and Montgomery County. However, one major urban area in the U.S. that has probably done the most of this is Allegheny County, PA (Pittsburgh metro, 1.4 million residents) which has taken over the 911 call taking and dispatching duties for numerous smaller PSAPs in the County and (in 2005) the entire Pittsburgh Police-Fire-EMS communications function as well. In fact, in Allegheny County today there are only two 911 PSAPs, one operated by the County government through their Department of Emergency Services, and the other operated by a consortium of suburban communities that have chosen to not join the County's system. Appendix 2 contains reference material on the Allegheny County system, showing the jurisdictional coverage of their two 911 PSAPs.

We have spoken to officials at Allegheny County 911 on the topic of "***how did you handle the many 7 digit calls that used to go to the local PSAPs"?*** They report that they mandated that each formerly separate PSAP entity have two sets of 7 digit numbers. One number (which they all historically had anyway) was the "7 digit alternate emergency number", which had always been answered by their local dispatchers anyway. The second number was the 7 digit "administrative number" which may or may not have been answered by local dispatchers in the given entity. Once this was in place, the County PSAP agreed to take calls dialed to that agency's old "7 digit alternate emergency number" on a "call-forwarding" basis to the County PSAP's 7 digit equivalent number. As for the 7 digit administrative number, that is the number that the local agencies are required to give out to their clients if their clients have a non-dispatch related need, and if the local agency wants to answer that number 24/7, they are free to do so. If they want to have a recording at some times of the day that says, ***"You have reached the _____ Police Department. Our offices are closed. If you need an officer, fire fighter or ambulance to respond now, hang up and dial 911 - If you need to talk to somebody at this time, and your call is not an emergency, hang up and dial XXX-XXXX. Otherwise, Press 4 for a _____ Police Department staff directory and you can then leave a message, or merely leave a message at the tone".***

The Allegheny County folks did allow as how the above systems are "a work in progress" and 7 digit call handling is still something of an issue for them. They also reported on another significant issue, which we have had significant exposure to as well in prior consolidating projects. The issue can best be called***: "Local Police Agencies Still 'Kind of Dispatching' for Themselves, Even***

Though They No Longer Have A PSAP". The issue is this: The local police station learns of the need for a local police officer to respond to a (usually) lower grade local event What the County PSAP would like is for that local police station to either call or refer their caller to the County PSAP and "enter the dispatch system" like any other event. That way, the official county dispatch system, CAD, and that agency's official (and responsible) dispatcher all know what is going on. However, the problem they report (and we have seen) is that the local P.D. calls their local police car on the local radio channel and tells that officer to "Go over to Mabel's house on the neighbor's barking dog, again". The officer fails to tell the County PSAP dispatcher that he has been so assigned and he proceeds to Mabel's house. Once there, the officer is assaulted by Mabel's neighbor (the dog owner) and grabs his portable radio and shouts "HELP"! Of course, neither the County dispatch system, CAD nor the dispatcher responsible for that officer knows where he is, know Mabel's address or know the nature of the incident that officer is handling and chaos ensues.

This problem must be anticipated and everything that can be done must be done to prevent it from occurring in any PSAP consolidation scenario.

Nevertheless, by almost any measure, the incoming phone call volume has the most dramatic impact on the staffing requirements for and the costs of equipping and staffing a large PSAP. The reason for this is fairly simple: It is only the flow of incoming phone calls that does NOT lend itself towards some form of organization and prioritization. It is only the flow of incoming phone calls that have no way of "pre-announcing" their level of severity. As such, every ringing 911 call (and too many ringing 7 digit calls) must be presumed to be, at least, potentially very important, up to potentially life threatening if not answered within a few seconds.

There are a couple of entities in the U.S. (Los Angeles, for example) that have been forced to implement recordings on their 911 lines which state ***"You have reached Los Angeles 911. If your call is NOT an emergency, hang up and dial XXX-XXXX. If your call IS an emergency, stay on the line and it will be answered in the order in which it was received"***. (Followed by the same message in Spanish or Spanish is selectable at the outset by pressing "2"). And, if the reader thinks that the public does not like "auto-attendant" messages on non-emergency 7 digit lines, imagine the reception to them for 911 lines.

However, there is one technology in this realm that does show some promise. There is a major problem with ***inadvertent 911 calls*** from cell phones. These result from the fact that many cell phones have the pre-programmed capability to automatically dial 911 whenever the "1" key is pressed and held down for 2 seconds or longer. There are thousands of documented cases where people had their cell phones in their back pocket and sat on them while driving, and they dialed 911. Clearly, the 911 system could not know this was why 911 was dialed, and the call had to be presented to the 911 system and answered by a 911 dispatcher someplace. But in many cases, when answered the 911 operator could hear nothing intelligible or worthwhile, but due to local "call back requirements" for 911 calls with no meaningful verbal communication, (that flowed from situations like persons hiding in closets dialing 911 and not speaking for fear of the burglar hearing their voice) the 911 operator has to go through the time consuming (and sometimes expensive if the wireless 911 call came from an out-of-area-code number) process of dialing the phone back ---- and it is rarely answered (remember, they are sitting on it!), so they have to leave a voice mail message asking "Is everything O.K." in response to which the only thing the subscriber could presumably do is call 911 back (yet another call to answer!) and apologize for the earlier inadvertent call.

The potential solution is an "intercept recording" specifically placed on 911 trunks that are carrying wireless 911 calls to the PSAPs (yet another good reason for separate 911 trunks for wireless 911

calls) which states, “YOUR CELL PHONE HAS DIALED 911. IF YOU INTENDED TO DIAL 911, PRESS ANY KEY ON THE KEY PAD NOW AND THE CALL WILL BE SENT TO THE 911 DISPATCHER”. Then, if no person is using the phone and it is sitting in somebody’s pocket or purse, nobody would hear the above message and nobody would press any key, and the call would not proceed to be a ringing 911 call. The only potential weakness here would seem to be the question of whether or not the above message should be presented in multiple languages or not, and, if so, in which order.

So, the number of phone calls is critical, due to their uncontrollable fluctuations. The other work done is a PSAP has the advantage of being able to the categorized and prioritized according to some awareness of what it is that is going on, since the initial interrogation of the reporting caller has been conducted. But even that is not a totally precise proposition. Perhaps the best example of this is the issue of how many police radio dispatch positions and channels (talk-groups) are to be staffed at any time.

In theory, regardless of how many 911 calls are being received, if all of the responses those callers were seeking could be neatly categorized and prioritized (that is what CAD helps with tremendously), and if there were to be only one “Priority 1” police incident per hour (major incident requiring INSTANT police response, such as OFFICER BEING ATTACKED or ROBBERY IN PROGRESS, etc.), it would be relatively easy for one dispatcher on one radio channel to dispatch that one Priority 1 incident per hour, since it would move to the head of the queue and take precedence over all other radio traffic and all other incidents being processed. And, in theory, this scenario should be true regardless of the size of the jurisdiction and the number of police officers on the street.

Then the Priority 2 incidents (less urgent, quick response is helpful but not life critical) ought to be handled in their age order, in relationship to the proximity of the responders to the pending Priority 2 incidents, followed by Priority 3 incidents, and so forth.

However, when one gets lots of “pending” Priority 2 incidents, they begin to “get stale” if not dispatched promptly, and the callers get upset and start calling back (creating still more 911 calls to answer), and the incident information gets old (suspect descriptions, direction of travel, etc.) and the efficacy of dispatching a Priority 2 event 30 minutes later becomes problematic. These Priority 2 incidents (and certainly Priority 3 incidents as well) can go un-dispatched and get stale for several general reasons:

- Too few police resources to assign to the incidents, meaning it takes longer to get X incidents responded to by Y police units.
    - Solutions: Increase the number of police resources or decrease the number of incidents requiring a response.
- Too inefficient a radio usage protocol, meaning that too much radio time is spent by dispatchers reading too many details of the incident over the radio, or, conversely, too much time is spent by officers “writing their reports” over the radio when they are done with the incident.
    - Solutions: Effective use MDTs so that only “HEADLINE INFORMATION” needs to be dispatched over the radio (“ROBBERY IN PROGRESS 1234 MAIN STREET”) with the details (descriptions, directions of travel, etc) from the CAD event being sent out to the responding unit’s MDT for review. (Understanding that in some particularly “hot” incidents, verbal descriptions and directions can be critical). Similarly, effective use of MDTs by officers to append

information to CAD event for later use and not tying up the airwaves for them.

- Too few radio dispatchers and/or two few radio channels for dispatchers to work on.
    - If one has plenty of physical dispatchers but only one radio channel for those several dispatchers to talk on, it will not solve the problem.
    - If one has plenty of radio channels and dispatcher consoles but too few dispatchers to staff them, it will not solve the problem.

Theoretically, one could implement a rigorous phone call classification and counting process at each of today's 17 PSAPs which would track the total number of phone calls answered, and then classify each of those calls into one of several after-the-fact categories, as follows:

- A call that would be appropriate in coming to the new consolidated PSAP.
- A call that would not be appropriate in coming to the new PSAP and would be fairly easy to re-direct through an effective public education campaign, coupled with effective diverted call systems and capabilities at the local agencies.
    - A classic example of how this could be done would be to implement a countywide 3-1-1 "non-emergency, governmental services system". Under such a system, anyone needing any local government service on a non-urgent basis, **and who doesn't already know the 7 digit direct number (which should be published in detailed directory listings**, would dial 3-1-1. Their call would be answered by an "automated attendant" that could either have voice recognition ("Please clearly state your community name") or provide a list of "Press ___ for City of Dayton" type choices. Then, once the caller waded through the automated attendant process, they would be automatically routed to the proper phone line at the proper department in the proper local government for their need to be handled, assuming it was working hours. If after hours, they could leave a voice mail message.
    - We stressed "could be done" above. We are fully aware of the public's general distaste for such systems and the political liabilities associated with implementing them, especially if not done with great care. But absent such a system, and absent a sound public education program, and absent a readily available resource directory for people to use to get to the right 7 digit numbers, then there will still be lots of "un-directed" or "misdirected" 7 digit calls that end up at PSAPs today that would need to end up at this PSAP in the future and cost a lot of money to handle.
- A call that would not be appropriate for the new consolidated PSAP, but for which prior re-direction would be difficult to accomplish and it would still likely come to and need to be dealt with at the consolidated PSAP.

After having done such a data collection effort for a number of months, one could hope to have a handle on these numbers. But tracking this workload is highly subjective. First of all, the current dispatchers need to remember to do it. Secondly, it has to be done by the human dispatchers who are being tasked to put "tic" marks on some sheet that is feeding into a project that may cost them their job. Third, to be of any value, it needs to have somewhat consistent value judgments applied to the three subjective questions being tracked.

Unfortunately, we don't see such a data collection process as likely to produce results that could be relied upon.

Therefore, we are left to rely on educated estimates as to how much the call load could be reduced from today's combined reported 1.8 million on both 911 lines and 7 digit lines.

Based on previous project experience we have amassed, as well as previous work experience, we are comfortable in developing estimates for a mixed density (urban-suburban-rural) population of 600,000 people, operating in an environment with thoroughly planned and implemented 7 digit local government, local number directories (perhaps buy a paid page in the front of the White Pages directory?) supplemented by an automated call-diversion system like 311 (it doesn't have to be the expensive network and costs of 311, as a simple 10 digit number like 937-333-3111) could do the job nicely. As such we estimate:

a. 0.50 calls to 911 per year from <u>wired</u> lines per 1,000 residents
b. 0.54 calls to 911 per year from <u>wireless</u> lines per 1,000 residents
    a. Total of all 911 calls:
        i. 1.43 calls to 911 per year x 559,000 = **<u>581,360</u>**
c. 1.5 calls to PSAP's legitimate call 7 digit number per 1,000 residents
    a. Total of 7 digit calls:
        i. 1.5 x 559,000 = **<u>838,500</u>**
d. <u>Projected, estimated total of all phone calls: 1,419,860/year.</u>

Now that we have a total number of projected phone calls to be handled, we can begin to estimate the staffing required for answering and processing these calls. This depends on some variables on which some arbitrary decisions need to be made. For example:

- How long are you willing to let a ringing 911 line go unanswered?
    - We assumed a somewhat national "standard goal" for 911 centers of 95% of all incoming calls to be answered within the first 10 seconds of ringing (that would be 1.5 rings in the caller's ear, on average).
- Are you willing to let a ringing 911 call go to a "please don't hang up" recording?
    - Based on the 1st item, this would be YES, but only if the call exceeded something like 20 seconds of ring time (just under 4 rings).
- How long are you assuming each caller will be on the line with an operator?
    - We took an average of our documented (in other studies) time for wired 911 calls of 74 seconds, and wireless 911 calls (they take more time to pin down locations) of 116 seconds and arrived at 95 seconds average talk time per call.
- How much time needs to be allocated after each call for wrap-up work on that call ---- time spent completing or perfecting the CAD entry.
    - We used an average of 60 seconds per call.

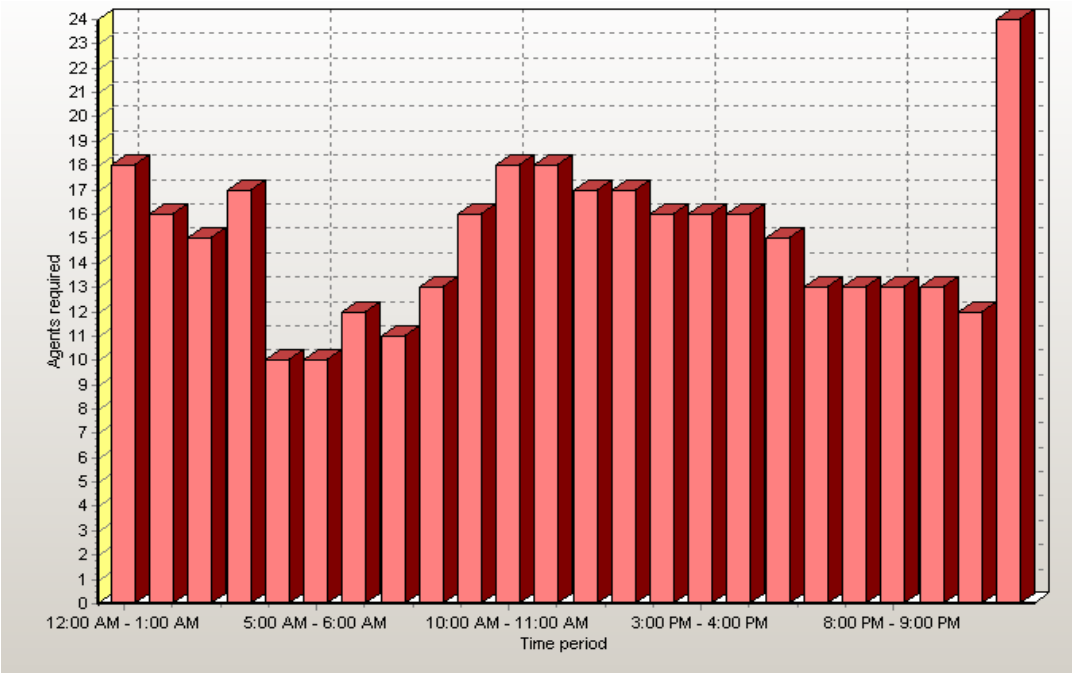
To determine the distribution of this call workload across the 24 hour day we use a set of observations we have made and compiled from a number of similar projects in other jurisdictions ranging in size from small to large, highly urban to very rural. These data show us that in a PSAP one can expect the following hour by hour breakout of phone call workload:

HOUR @ START OF TX CALL	PERCENT OF DAY'S TX CALLS @ THIS HOUR
0000-0059 (Midnight)	5.36%
0100-0159	4.54%
0200-0259	4.03%
0300-0359	4.78%
0400-0459	2.39%
0500-0559	2.20%
0600-0659	3.06%
0700-0759	2.50%
0800-0859	3.39%
0900-0959	4.58%
1000-1059	5.58%
1100-1159	5.44%
1200-1259 (Noon)	4.79%
1300-1359	4.83%
1400-1459	4.65%
1500-1559	4.63%
1600-1659	4.48%
1700-1759	3.95%
1800-1859	3.46%
1900-1959	3.57%
2000-2059	3.53%
2100-2159	3.37%
2200-2259	3.20%
2300-2359 (Midnight)	**7.69%**

Certainly, these days and times fluctuate widely based on a host of external factors such as the weather, when the 1st and 15th of the month falls (pay days), when welfare checks are issued, when social security checks are received, and when certain holidays known for celebrations occur, such as New Year's Eve and the 4th of July, and when certain crowd or activity producing events occur. Then, using special call center staffing software (Ansapoint Version 2.0 from Westbay Engineering, Ltd) we can plug in the results of the above decision making and call distribution assumptions and the software tells us how many "agents" (call takers) would be required to handle that workload under those operational and performance assumptions.

The results are as follows:

Time period	# All TX Calls	# Agents req.	Avg. seconds in which calls are answered	Avg. seconds calls in queue	Occupancy rate of agents (% of time they're busy)
12:00 AM - 1:00 AM	209	18	1	0	60
1:00 AM - 2:00 AM	177	16	2	0	59
2:00 AM - 3:00 AM	157	15	1	0	56
3:00 AM - 4:00 AM	186	17	1	0	57
4:00 AM - 5:00 AM	93	10	2	0	50
5:00 AM - 6:00 AM	86	10	1	0	46
6:00 AM - 7:00 AM	119	12	1	0	51
7:00 AM - 8:00 AM	97	11	1	0	46
8:00 AM - 9:00 AM	132	13	1	0	52
9:00 AM - 10:00 AM	178	16	2	0	59
10:00 AM - 11:00 AM	217	18	2	0	62
11:00 AM - 12:00 PM	212	18	1	0	61
12:00 PM - 1:00 PM	186	17	1	0	57
1:00 PM - 2:00 PM	188	17	1	0	58
2:00 PM - 3:00 PM	181	16	2	0	60
3:00 PM - 4:00 PM	180	16	2	0	60
4:00 PM - 5:00 PM	174	16	1	0	58
5:00 PM - 6:00 PM	154	15	1	0	55
6:00 PM - 7:00 PM	135	13	1	0	53
7:00 PM - 8:00 PM	139	13	1	0	54
8:00 PM - 9:00 PM	137	13	1	0	54
9:00 PM - 10:00 PM	131	13	1	0	51
10:00 PM - 11:00 PM	125	12	2	0	54
11:00 PM - 12:00 AM	299	24	1	0	64
TOTAL CALLS/DAY	**3892**				



A recap of the above data is as follows:

- IF there were to be 1,419,860 phone calls answered per year in a single PSAP.
- IF all those calls were to be subjected these performance standards:
  - *95% of all incoming calls (911 and 7 digit) answered within 10 seconds*
  - *An average (wired/wireless 911 and 7 digit) "talk-time" of 95 seconds per call*
- IF there were to be allocated 60 seconds of "wrap-up time" after each call
- **THEN**
  - *There would be an average of 3,981 calls answered per day*
  - *When the "time of day" percentages are applied to each hour of the day, those 3,981 calls would be distributed as indicated for each of the 24 hours.*
  - *Dealing with that number of calls during that hour period, within the above performance standards, would require the number of "Agents" (call takers) indicated in the table (from a high of 24 on duty to a low of 10 on duty).*

Clearly, these data outcomes are the result of math calculations. They use the "Erlang formula" for these calculations which has been proven to be valid in predicting activity queuing activity in such environments. As a math formula, the outcomes can be altered if the data inputs are altered. For example:

- If the number of total calls is reduced, but the standards are maintained, then the number of agents needed would go down.
- If the standards (currently applied to ALL 911 and 7 digit calls) are modified, that will impact the number of agents, as well as the performance.
  - If permissible ring time goal is altered, then the number of agents needed changes as well.
  - If the presumed talk times are shortened or lengthened, that affects the number of agents needed.
  - If the presumed "wrap up time" is altered, then the number of agents needed changes.
  - If the "Agent Availability" factor is changed, then it will affect the number of agents needed.
    - ***NOTE: "Agent Availability" is the percentage of an agent's work time during which that agent is available to answer calls or talk on calls or wrap up calls. In other words, "the percent of time they are in their chair available to work".*** *For this analysis, we used a factor of 85% here. This is based on the premise that out of an 8 hour work day (480 minutes), an employee will be available to work 85% of those minutes, or 408 minutes, which allows for 72 minutes of break time, which would be a half hour lunch and two twenty minute breaks. This is an interesting discussion point. Most "8 hour full time workers" in the U.S. actually work more like an 8½ or 8¾ hour day, and their "break time" is "off the clock", per se. But in 24 hour operations, (like dispatch centers), shifts are more often broken in even 8 or 10 hour increments and something like 4 ten hour shifts or 5 eight hour shifts are considered full time in a week. We think this explains some of the all-too-prevalent practices of requiring dispatchers to eat their meal at their workstation and take no meaningful breaks. This is also against state labor regulations in most states.*

Because this exercise was done using the projected total of all wired 911, wireless 911 and 7 digit calls that might be presented for answering in a year and applied the same high performance standard to all of them, we wondered how the staffing requirements would change if we applied these rather rigorous standards only to the 911 calls (581,360) and then applied far lesser standards to the 7 digit calls.

But this can be very confusing and very difficult. Simply put, we could run the program twice, once with the 581,360 calls to 911 and with rigorous standards applied, and then again with 835,500 seven digit calls with much less rigorous standards applied. Then we could merely add the results of the two software runs together. If the 911 report said we'd need 6 agents to handle XXX 911 calls during hour Y, and the 7 digit report said we'd need 4 agents to handle XXX 7 digit calls during hour Y, then we could say that 10 total agents are needed during that hour.

But we think this is flawed logic. We think that when one considers the random nature of the timing of the inbound calls (911 and 7 digit), one should be persuaded that during some of the time that a person is NOT BUSY taking a 911 call, they could answer a 7 digit call, and vice versa. So we don't think that adding these outputs together gives a true accurate projection of required staffing.

But we do think altering the performance requirements to arrive at an "average performance requirement" that would serve both the 911 calls and the 7 digit calls would be more appropriate. Our projections are that there would be 3,891 total phone calls (avg.) on each 24 hour day. Of these, we project that 1,593 would be 911 calls, or 41%, leaving 59% of the calls as 7 digit calls.

Using this assumption, we then do the following calculations:

- If 95 seconds are going to be spent on the average 911 call, and there are 1,593 calls per day it means that 151,335 seconds would be spent in that 24 hour day talking on 911 lines. That amounts to 2,522 minutes, or 42.04 hours spent in a 24 hour day talking on 911 lines.
- If one assumes 75 seconds would be spent on the average 7 digit call (this is clearly an estimate as hardly anyone tracks this data today), and there are 2,298 such 7 digit calls per day, then 172,350 seconds per day would be spent on 7 digit calls, or 47.88 hours.
- If one assumes a 60 second call wrap up time for ½ of the 911 calls (many of them do not individually result in a CAD event being created or appended) that would be 13.27 hours spent on 911 call wrap-up over the 24 hours.
- If one assumes a 60 second wrap-up for ¼ of the 7 digit calls (most of which would probably be simple informational calls), that would account for 9.57 hours over the 24 hour day.
- Adding these up (42.04 + 47.88 + 13.27 + 9.57) we arrive at a total of 112.76 staff hours required per 24 hour day, in the chair, talking on the phone or wrapping up phone calls.
- 112.76 hours per day x 365 days = 41,157 staff hours required per year to answer phone calls under the above assumptions.

Staffing numbers in 24/7/365 operations can often be a confusing issue. Simply put, it is a question of math, as follows:

- There are 8,768 hours in a non-leap year.
- A FT employee is paid for 40 hours per week x 52 weeks (2,080hrs)
- A FT employee is assumed to take 2.5 weeks (-100 hrs) vacation/yr.

- A FT employee is assumed to take 6 sick days (-48 hrs) per year.
- A FT employee is assumed to get 11 paid holidays per year (-88 hrs).
- Leaving a balance of 1,844 actual hours at work per employee/year
- However, when that person is scheduled and is at work, they are only available to be at their workstation about 85% of their work period. .85 x 1,844 = 1,567 physically deployed hours per year.
- Dividing 8,768 hours/yr. by 1,567 deployed hours per person we get 5.595.
- Therefore, it takes ABOUT 5.6 people to schedule one person to physically be in one chair for one year, 24/7/365.

Above, we calculated that there would be 41,157 staff hours required per year to handle the phone call volume only (no radio dispatching yet at all). If we divide our 1,567 deployable hours per person into these 41,157 hours we arrive at a need for **26.26 Full Time Equivalency (FTE)** staff *for the phone call handling role alone* in our conceptual single Montgomery County PSAP.

Now we move to radio dispatch staffing, supervision and management/administration.

Determining radio dispatch staffing is a far different process, especially as it relates to police dispatch staffing. Simply, all one needs to decide is "how many dispatch channels do we want to staff at a time", and then multiply that by the above numbers to figure out how many staff hours would be needed to fill those chairs at those police radio dispatch positions.

The math part is simple. The hard part is deciding which agencies will be on (perhaps sharing) which of X number of dispatch channels at which times. Today there are about 21 police dispatch chairs filled during the average hour at the 14 law enforcement PSAPs in Montgomery County. These 21 dispatchers are handling about 16 main police dispatch channels/talkgroups. These range from a heavily occupied zone talkgroup with the Dayton PD with one dispatcher, to a much lighter use police main channel in a small agency like the Germantown PD, with one dispatcher (who also serves as a call-taker). If one wanted to replicate this configuration at a consolidated PSAP, it would be do-able and easy, from a decision making perspective. It would also be easy from a radio resource perspective, in that one could merely use all the same radio systems that exist today. But it would be very expensive to staff 21 police dispatch positions in one PSAP, with none of them doing phone calls, and some being very busy and some being not busy at all.

21 dispatch positions x 8,768 hours per position per year = 184,128 hours of staffing required. That would require hiring 117.5 FTE. And we haven't covered fire/EMS yet. Clearly, to take any advantage of the economies of scale gained by having all the police radio dispatchers in the same room, one would need to consider deploying fewer than 21 zone dispatch positions per shift. We know of many PSAPs handling this police radio call load and greater with far fewer than 14 positions per shift. It is our estimate that a peak of seven police radio only positions would be adequate, with the option do drop down to as few as four during very slow periods. We think seven might be required about 25% of the time, with the 24 hour average being 5 police dispatch positions. Five positions staffed would call for 43,840 hours per year, or **27.98 FTE**.

Obviously, running less than 21 police positions means that some of today's police dispatch workload and radio traffic would have to be shared among several agencies on the same radio talkgroup. We are not nearly as well attuned to the natural barriers and/or affiliations between police agencies and the publics they serve to make a firm determination on how this sharing should be done, but for example only here's one way it could be configured:

Assuming a peak period with 7 police dispatch positions filled: (remember NO PHONE CALLS ANSWERED, and NO FIRE DISPATCHING DONE --- and in all cases, when the MCSO is either the contract law enforcement provider for an area within that geographic zone, or they are today's contract dispatcher for police agencies in that geographic zone, they are handled on that zone's channel)

1 position handles today's Englewood/Brookville general area police dispatch work
1 position handles today's Vandalia and Huber Heights general area police dispatch work
2 positions handles today's Dayton PD workload
2 positions handle today's Oakwood, Moraine, Kettering and West Carrolton area workload
1 position handles today's Miamisburg, Centerville, Miami Township and Germantown area workload.

Again, we are not saying the above configuration is the one that makes the most sense. What we are saying is that it is representative of how one could do this. Local authorities would be far better positioned to make these judgment calls about where dispatch zone boundary lines should be drawn, but we are confident that the amount of workload could be well handled by this number of dispatchers, at a peak time period.

We also think it would be appropriate for 24/7 "modified non-dispatch radio position" which would serve all zones for things like verbal information checks (that can't be run via MDT) tow calls, phone calls, records look-ups, etc. Said position could also serve as an over-flow call taker. This would require 5.6 FTE to staff. And, we should add that there should also be several other dispatch workstations set aside to be used for special tactical operations, special event dispatching, etc. and the staffing of them would have to come from overtime, reassigned other staff or supervisory staff.

IMPORTANT POINT: We can't stress enough the importance of understanding how an operation such as the one described above would be a "sea-change" in the way police dispatching is done in Montgomery County. The most important element of this change is that all police dispatch activity (***regardless of department***) would take place on a geographic zone basis (CAD can easily accommodate this), merging the police call dispatch activity of several law enforcement agencies on one radio pathway for a given zone. This would mean (under the above theoretical configuration) that all Oakwood and Moraine police radio dispatching and talk between officers and their one dispatcher would take place on one radio pathway, while Kettering and West Carrolton officers were required to listen, and vice-versa. The down side of this is they would have to hear a lot of stuff they don't have to listen to today, much of which is of no interest or value to them in their community. The upside of which is that they would have to hear a lot of stuff they don't ever hear or find out about today, some of which could be very valuable to them in their street police work.

Having worked in both types of environments (private channels for each agency vs. shared channels serving several agencies) we are strongly committed to the belief that those geographically contiguous separate police agencies which operate on the same radio pathway (within call load reason, of course) with the same dispatcher are far, far better coordinated in their activities and far more likely to help each other out, and have far more situational awareness of what's going on in their immediate area at any time. And this is the essence of **"interoperability"** If the officers from two or more agencies are used to working together under common radio procedures and dispatch protocols day in and day out, having them "interoperate" during a major incident becomes a non-issue.

One more comment is needed to facilitate how this sort of police radio dispatch configuration could be implemented. That relates to the "expansion and contraction" of the configuration throughout the day and the week, and over time. Recall that in a two stage dispatch model (which is virtually required in a PSAP handling this workload), all of the phone calls are answered at other workstations, by other staff in the PSAP. These call takers don't need to care and don't even really need to know how many police zone dispatch positions are in effect. They just answer calls and enter the CAD incidents, and CAD routes their entered incidents to whichever police dispatch position workstation is appropriate for the geographic location of that call. If there are 7 police dispatch zones in effect, that workstation might be #4, but if there are only 4 police dispatch zones in effect, it might be workstation #2. Throughout the day (usually at PSAP shift changes) dispatchers make announcements like "We will be on a 5 zone map plan for the entire shift", and the communications SOP with all the agencies dictates that in a "5 zone map plan", each of the 5 dispatch zones is handled by a specific radio dispatch workstation in the PSAP. If it is a "6 zone map plan" then the SOP spells out which agencies are clustered in which way on which channels, handled at which workstation.

Further, it is then possible, even in mid-shift, to change the configuration. Assume that some tactical SWAT incident is happening, and a dedicated dispatcher is needed for said event. Assume the PSAP had been operating on a 6 zone map plan. At any instant the communications shift supervisor can declare that they will be moving to a 5 zone map plan and either have those affected departments switch their radios over to the talkgroup appropriate for a 5 zone plan, or their regular 6 zone talk group could be patched to their 5 zone talk group for the duration of the incident. Meanwhile, the supervisor would have moved the tactical incident over to the workstation that had been handling the 6th zone in the 6 zone map plan and have that dispatcher handle the tactical incident.

Under such a system, it is also possible to set up even more zones for regular dispatch. This could come in handy for days like the 4th of July if many of the communities had large celebrations and were generating lots of radio traffic. Similarly, if the number of agencies grows over time, or their size and workload grows, the number of zones over which they are to be dispatched could also grow, almost infinitely.

Now on to fire and EMS dispatch staffing: In general, and because the fire service is so involved with Incident Command and Mutual Aid, it is our inclination to recommend that fire/EMS dispatch be handled as a service, rather than being broken up on a geographic basis. In other words, we think there should be one countywide, fire dispatch channel/talkgroup. However, as stated earlier, fire dispatch operates under more of a "team concept" than police dispatch, and it would not be inappropriate for a single fire dispatch talkgroup to be active at two to four fire dispatch workstations each with their own radio dispatcher. We think that an average of 3.5 dispatchers on duty at a time would be the appropriate staffing for this configuration. (Remember, they're not talking to 911 callers on most events anymore.) Further (assuming a universal job class model with all staff being cross trained in all duties) we think that two of these four fire workstations' could also be configured as overflow 911 call taker positions. So, with our 3.5 on duty at a time staffing average for fire dispatch, we would need 35,072 staff hours, or **19.58 FTE.**

By way of summary, our single PSAP non-supervisory staffing needs so far are:

- Call takers = 26.26 FTE
- Zone police dispatch = 27.98 FTE
- "Police Info channel" dispatch 5.6 FTE
- Fire /EMS dispatch 19.58 FTE
    - **TOTAL** **79.42 FTE**

To these ranks we now need to add supervisory staff. We advocate two levels of operational shift supervision. For each of the three natural time shifts of the day (days, afternoons/evenings and nights) we suggest one **COMMUNICATIONS MANAGER** position. In a police environment, this would be equivalent to a Staff Sergeant. This person "owns" everything, all activity, and every person assigned to their time of day shift period, seven days a week, 365 days a year. Clearly they don't work all those days, but they have functional responsibility for that time period. This assignment would require 3.0 FTE. We also suggest that the Communications Manager job class also be deployed in the form of three additional FTE, one for **TRAINING AND H.R. MANAGER,** one for **TECHNOLOGY MANAGER**, and one for **OPERATIONS MANAGER (Assistant Director).** We would suggest that these 6.0 FTE all be considered "management generalists", eligible for assignment to any of these functions and transferable among them at the discretion of the Director.

Each shift based Communications Manager is then assisted by two **SHIFT SUPERVISORS**, and for every one of the 365 day's three shifts, either the Manager or one (or more) of the Shift Supervisors is on duty, in command. We see these being equivalent to entry level Sergeants in a police context, This position would require 6.0 FTE.

At the top of the organization, we see a **DIRECTOR OF EMERGENCY COMMUNICATIONS**, as the CEO of the organization.

We also see the administrative office requiring 2.0 FTE in Administrative Assistant positions, one for payroll and other clerical work, and the other for the often time consuming task of responding to records requests, subpoenas, etc.

Updating our staffing requirements:

- Call takers =	26.26 FTE
- Zone police dispatch =	27.98 FTE
- "Police Info channel" dispatch	5.6 FTE
- Fire /EMS dispatch	19.58 FTE
- Communications Managers	6.0 FTE
- Shift Supervisors	6.0 FTE
- Director	1.0 FTE
- Administrative Assistants	2.0 FTE
○ **GRAND TOTAL**	**94.42 FTE**

Importantly, this figure is based requirements to actually ***deploy*** these many FTE, trained and fully able to function. As any manager knows, this means either more than this number of FTE will need to be hired, and be in various stages of training, in and out processing and sick and other leaves, or overtime will need to be used in significant measure. Or, a very flexibly deployable workforce will be required. Towards this end, we are very favorably disposed to an operations class workforce with a mix of full time and regular part-time staff.

For example, our staffing (as above) calls for 79.42 "workers". If it were to be decided that all these positions should be filled from one universally trained job class called "Public Safety Communications Operator" (PSCO), then we could see there being a pool of something like 55 full time PSCOs augmented with as many as 40 permanent part-time PSCOs, for a full complement of 95 PSCO persons who work a grand total of 165,194 hours per year, or the equivalent of 79.42 full time employees.

It has been our experience that with the changing work world, changing technology, changing family life patterns, etc. having a job class in which an employee can migrate from full time to part time to full time again, and so forth, can be very attractive for the employee, as well as providing unequalled flexibility and opportunities to do significant staffing up in an emergency communications center environment.

COSTS OF THIS STAFFING COMPLEMENT:

As a part of our data collection activities, we sought pay rate information for all dispatch positions in the County. Generally, it is our position that no PSAP consolidation will likely occur if a significant number of the potential staff were to have to take pay cuts to move to the new facility or organization. Similarly, we believe that the bulk of (if not all of) the staff for a consolidated PSAP will have to come from the ranks or today's current dispatchers. Therefore, it is our sense that the best way to estimate pay for the new PSAP is to take the current starting and top pay rates for working staff in the highest paid local PSAP(s) today, and apply those rates to this estimating process.

We are aware that it is highly likely that the workers in any new PSAP, operated under any form of public entity (be it a current PSAP operating agency or a new entity set up for this purpose) would likely choose to be represented by a union. Given this, we are aware that the ultimate pay and fringe benefit costs would be subject to negotiation with that union. But the outcome of that potential process cannot be predicted, so we are left to applying today's known rates.

Here are today's current pay rates:

Agency	Start Rate/hr.	Top rate/hr:
Brookville PD	$12.72	$15.85
Centerville PD	$15.21	$21.42
Dayton FD	$15.62	$20.81
Dayton PD (civilian call taker)	$14.96	$19.96
Englewood PD	$14.28	$18.25
Germantown PD	$10.69	$14.06
Huber Heights PD	$14.39	$19.38
Kettering PD	$18.02	**$23.09**☜
Kettering Fire	$18.02	$23.09
Miami Township PD	$14.32	$18.27
Miamisburg PD	$16.211	$20.791
Montgomery Sheriff's Office	$13.57	$14.51
Moraine Police	**$19.49**☜	$21.65
Oakwood Public Safety	$14.64	$21.55
Vandalia PD	$15.83	$20.44
Wash. Twsp. Fire Dep't.	$14.89	$19.53
West Carrollton PD	$15.94	$20.59

As can be seen from the above, the highest start rate is Moraine's $19.49/hr. ($40,539/yr.) and the highest top rate is Kettering's $23.09/hr ($48,027/yr). If one assumes that the average staffer at any new PSAP would be at the mid-range of these two, that figure would be $21.29/hr. ($44,283)

If we apply this $21.29 per hour to the 165,194 hours that our 79.42 FTE PSCOs would work, the resulting total is **$3,516.980.**

For the administrative supervisory and management positions, we project that the following pay rates would be normal in this labor market:

Administrative Assistant:	70% of top PCSO = $16.16/hr. ($33,613)
Shift Supervisor:	20% premium over top PCSO = $27.71/hr ($57,637)
Communications Manager:	15% premium over S.S. = $31.87/hr. ($66,290)
Director:	15% premium over C.M. = $36.65/hr ($76,232)

Applying these per hour rates to the required FTE we arrive at:

Admin. Assistant:	4,160 hours @ $16.16	= $ 67,226
Shift Supervisor	12,480 hours @ $27.71	= $345,821
Communications Manager: (Exempt)	6 @ $66,290	= $397,740
Director: (Exempt)		= $ 76,232
TOTAL		**$887,019**

GRAND TOTAL BASIC WAGES: $3,516,980 + $887,019 = $4,403,999 per year

To the above basic wage and salary cost figure, we propose adding a factor of 40% for all fringe benefit costs.

$4,403,999 + 40% = **$6,165,599 total labor cost** .

Over and above the costs of labor are the indirect costs for supplies, maintenance, debt service (where applicable) contract services, etc. Generally, for larger, stand-alone organizations such as this potential MECC we see those costs being around 25% of the total operating budget for the organization. Accepting this 25% of the total budget non labor costs figure results in a total annual budget of $8,220.000, of which 75% is $6,165,000. Therefore:

Total annual operating cost estimate: $8,220,000

To close out this analysis, we will apply our earlier stated series of questions:

- How does the configuration being examined relate to:
  - Changes in, improvements to or detractions from overall dispatch operations?
    - **It is our sense that the service continuity, efficiency and coordination would increase greatly if all incidents could be processed with only one phone call being required, no call transfers being required, complete and identical information sharing amongst all dispatchers and response agencies.**
  - Radio communication issues?
    - **If it was concurrently decided to put all response agencies on the County/City trunked radio systems with complete interoperability between them, the County would have achieved the absolute highest level of communications interoperability possible.**
  - 911 and 7 digit call handling issues?
    - **In our view, 911 call handling would become markedly smoother and more effective.**

        - **How to deal with/dispose of/have answered elsewhere those 7 digits calls that really don't belong in the new single PSAP will be a major challenge and must not be taken lightly.**
- Data collection issues?
    - **By having everyone operate on unified and integrated CAD, recording, radio and phone systems, this issue is greatly enhanced.**
        - Local police and fire agencies should not fear problems with their local Records Management Systems (RMS). Many CAD systems are equipped to output "event header data" from the CAD incident files to the local RMS systems for inserting into new records in those systems, which can they be supplemented (or not) at local agency discretion.
- Public safety facilities access issues?
    - **As it relates to the security of local police facilities and the participation of dispatch staff in that security or prisoner/booking CCTV monitoring, this option means MAJOR CHANGES.**
- PSAP supervision issues?
    - **In our view, today's minimal to non-existent professional and on-the-scene supervision in PSAPs would be greatly enhanced by having a cadre of 14 managers and supervisors in a larger consolidated facility.**
- "1 stage" vs. "2 stage" dispatching issues?
    - **In this model, it is our view that 2 stage dispatching is mandatory, with its strengths and its weaknesses.**
- "Cross Service" vs. "Service Specific" dispatching issues?
    - **In this model we have presumed and we recommend that each employee be able to handle all the various work tasks, but that they handle them one at a time based on their workstation of assignment.**
- Civilian vs. sworn staff issues?
    - **It is our recommendation to deploy 100% civilian professional emergency communications staff and management.**
- Universal call talker vs. Service Specific call taker issues?
    - **It is our recommendation to use one set of call taker positions on a shift to handle all inbound calls.**
        - However, we would suggest an examination of the Fulton County, Georgia (Atlanta) and San Jose CA practice of splitting these exclusive 911 call takers into two "tiers", with several call takers who answer ONLY 911 calls ("call screeners") to determine their severity, and a 2nd tier of operators who answer all 7 digit calls, and to whom all non-urgent 911 calls are passed for further processing.
            - We have seen this in very few places, but as deployed in Fulton County the results in terms of reducing ring times on 911 calls are quite impressive.
- State law and regulation issues?
    - **None unique to this configuration**
- Management and control issues?
    - **We recommend that the CECCA be formed, regardless.**
    - **This could be a major issue depending on the outcome of discussions/negotiations on how 307.63 will be interpreted and applied.**
- Cost and funding issues?

- **We believe this option could be operated for significantly less than $8.5 million per year, which could mean a savings of as much as 37% off today's $13 million annual cost.**
    - We recognize that some of this up to $4.8 million in savings would be reallocated by local government to back-fill some of the services and tasks that the previous locally based dispatchers had been providing. But the degree to which this would happen would require decision making on a case by case basis in each locality.
- **We believe that with more cost efficiencies being possible, and with a broader, more logical funding formula applied, there would be inherently more accountability, logic and supportability in the provision of these important public services than is currently the case.**
- **We believe that the best way to fund the operations of such a system would be to either collect 911 surcharges under revised procedures we have recommended, or to seek a general county levy to pay the operational costs, or a combination of the two.**

REGIONAL PSAPs:

Next we will examine several potential configurations for regional PSAPs. This will be really more of a "sample exercise" in that the specific mixing and matching of the several PSAPs can take on almost infinite varieties. We hope, however, to establish some organizing and staffing principles for these regional PSAPs which could then applied to other possible combinations.

The first thing to be discussed is the organizational vehicle under which said "regionalization" of PSAPs might occur. Several options seem apparent:

a) A Countywide Emergency Communications Coordinating Authority (CECCA) is formed by the County Commission, as was also suggested under the one consolidated PSAP model.
    (1) The CECCA decides NOT to have one large PSAP (at not least at the outset), but rather to operate several regional, or service specific PSAPs.
        (a) The CECCA would have to decide whether or not to continue the practice of transferring fire/EMS calls to secondary PSAPs. If so, then they'd have to decide how many such secondary PSAPs to have and where to have them.
    (2) The CECCA hires a Director of Emergency Communications and that person hires Technology, Training/H-R and Operations Managers, but they are largely staff positions operating at a non-operational Headquarters level overseeing plans, training, technology and operations of this multi-PSAP operation they oversee and coordinate.
    (3) The CECCA employs the dispatchers for the several regional or service specific PSAPs, and makes the decisions regarding staffing at the several Regional or service specific PSAPs.
    (4) The CECCA becomes the owner of and manager of all public safety communications technology elements (CAD systems, 911 systems, radio systems, etc.) and oversees the networking of these services in their provision of services to all entities and PSAPs in the County.

b) A CECCA is **not** formed to analyze these issues, make decisions and coordinate operations. Rather, via independent (but hopefully coordinated) political actions, some to all of the Township Boards, City Councils and the County Commission decide to reach out and enter into "Joint Powers Agreements" (JPAs) with whichever neighbors they choose to cooperate with in the operation of a shared PSAP.
    (1) These independent JPA bodies need to come up with their own cost sharing agreements, management structures, etc.

c) A CECCA is **not** formed and no JPAs are entered into. Rather, like-minded communities decide to get together and have one community package and sell their dispatch services to other communities for some negotiated price.

Because of the many and unpredictable options presented under items b) and c) above, our analysis here will focus on potential a): the CECCA managing and operating several regional PSAPs.

With the earlier stated caveat that as outside consultants we are not in the best position to make decisions about which sets of municipalities make the most sense to work together and/or be dispatched together, we will work through this exercise using the theoretical groupings that we used earlier in our discussion of the configuration of police dispatch zones. We will also use the staff costs we developed earlier. Under that model we had:

● One PSAP serving those agencies now served out of the Brookville/Englewood PSAP

Approximate dispatched event load:	58,149/year
Approximate 911 call load:	18,227/year
Approximate 7 digit call load:	103,112/year
Total Activity Index (3 above added)	*179,488*
Average on-duty staff required:	2.5
Total operational FTE required:	13.0
Total Supervisory FTE required:	1.0
Total direct and indirect staff cost:	$886,265/year (incl. 40% fringe cost)
Total annual operating cost:	**$1,182,000**

● One satellite PSAP serving those agencies now being served by Vandalia and Huber Heights

Approximate dispatched event load:	74,534/year
Approximate 911 call load:	9,886year
Approximate 7 digit call load:	88,148/year
Total Activity Index (3 above added)	*172,568*
Average on-duty staff required:	2.5
Total operational FTE required:	13.0
Total Supervisory FTE required:	1.0
Total direct and indirect staff cost:	$886,265/year (incl. 40% fringe cost)
Total annual operating cost:	**$1,182,000**

● One 'Central PSAP" serving the MCSO, Dayton PD and *all fire dispatch service countywide*.

* A secondary PSAP for some fire/EMS calls initiated outside this PSAP's 911 service area
* All agencies currently receiving contract dispatching from the MCSO or DFD are here

Approximate dispatched event load:	590,791/year
Approximate 911 call load:	472,564/year
Approximate 7 digit call load:	506,015/year
Total Activity Index (3 above added)	*1,569,370*
Average on-duty staff required:	3.5 avg. fire radio dispatchers 4.5 avg. law radio dispatchers 7.5 avg. 911 call taker dispatchers
Total operational FTE required:	86.73
Total Supervisory FTE required:	7.0
Total direct and indirect staff cost:	$5,929,128/year (incl. 40% fringe cost)
Total annual operating cost:	**$7,906,000**

● One Satellite PSAP serves those now served by Oakwood, Moraine, Kettering & W. Carrollton

Approximate dispatched event load:	125,603/year
Approximate 911 call load:	31,908/year
Approximate 7 digit call load:	228,625/year
Total Activity Index (3 above added)	*386,136*
Average on-duty staff required:	4.5
Total operational FTE required:	25.18
Total Supervisory FTE required:	1.0
Total direct and indirect staff cost:	$1,641,378/year (incl. 40% fringe cost)
Total annual operating cost:	**$2,189,000**

- One satellite PSAP serves the Miamisburg, Centerville, Miami Township and Germantown PSAP areas.

Approximate dispatched event load:	105,689/year
Approximate 911 call load:	29,151/year
Approximate 7 digit call load:	297,002/year
Total Activity Index (3 above added)	*431,842*
Average on-duty staff required:	4.8
Total operational FTE required:	26.86
Total Supervisory FTE required:	1.0
Total direct and indirect staff cost:	$1,745,532/year (incl. 40% fringe cost)
Total annual operating cost:	**$2,328,000**

Summarizing this "5 Regional PSAP configuration":

Approximate dispatched event load across 5 PSAPs:	980,369/year
Approximate 911 call load across 5 PSAPs :	593,644/year
Approximate 7 digit call load across 5 PSAPs	1, 545,900/year
Total Activity Index (3 above added) across 5 PSAPs	*3,119,913/year*
Average on-duty staff required across 5 PSAPs:	34.3
Total operational FTE required across 5 PSAPs:	126.53 FTE
Total Supervisory FTE required across 5 PSAPs:	11.0
Total 5 PSAP direct and indirect staff cost (w 40% fringe):	$12,729,946/year
Total CECCA/MECC Admin & HQ Staff (6 FTE w/40% fringe)	$ 479,259/year
TOTAL DIRECT & INDIRECT LABOR:	**$13,209,205/year**

Total annual operating cost including services, mtce. debt service, etc. assuming the above total direct and indirect staffing costs constitute 75% of the agency's total budget:

$17,612.000 per year

Reminder: The above model assumed the following:

- The CECCA is formed to own, oversee, manage and coordinate all activities in the 5 regional PSAPs, and it is the employer of all staff.
- The unit personnel costs calculated and determined for the single PSAP model are applied here as well.
- It is assumed that the same technology infrastructure would exist here, except that it would have to be networked and remoted out to 4 PSAPs away from the one head-end PSAP, wherever that might be.
- The same call loads and dispatch activity currently experienced by the 17 PSAPs would be handled at these 5 regional PSAPs.

We will now apply our earlier matrix of questions and issues to this model:

- How does the configuration being examined relate to:
  - Changes in, improvements to or detractions from overall dispatch operations?
    - **Assuming that the same integrated and networked 911, CAD and radio system technologies that were envisioned for the one central PSAP model are employed here (just extended out to 4 remote PSAPs) some to much of the same operating efficiencies and flexibilities could be achieved.**
      - **For example, a radio dispatch position/call taker position at one of the satellite PSAPs could be taken off line and that work load could be routed to a call taker and new radio position at the Central PSAP.**
    - **There would be some transferring of Fire/EMS calls since all fire EMS dispatch would come out of the Central PSAP, so 911 calls initiated in the satellite PSAP areas would have to be transferred to Central.**
  - Radio communication issues?
    - **Same assumptions as above**
  - 911 and 7 digit call handling issues?
    - **Same assumptions and issues as above**
  - Data collection issues?
    - **Same assumptions and issues as above**
  - Public safety facilities access issues?
    - **Somewhat different here in that it is a reasonable assumption that the 4 Satellite PSAPs would be located in police facilities that already exist, thereby retaining access to at least the agency that houses the PSAP.**
  - PSAP supervision issues?
    - **We have provided for one FT dedicated supervisory position for each of the 4 satellite PSAPs, and while that does not provide 24/7 on-scene supervisory coverage, it does provide a sort of "branch management" function for liaison to/from the CECCA/MECC management. This dedicated FT person is more than exists at many of the local PSAPs today but would not be as robust as would be available under the one PSAP model.**
    - **For the Central PSAP we have provided 7 FTE for supervision, assuming 1 Communications Manager (like a Branch Manager) and 6 FTE to provide 24/7 "on-the-floor" supervision in this much busier PSAP.**
    - **We have the same executive, clerical and 3 Manager positions in a HQ role at the CECCA HQ facility.**
  - "1 stage" vs. "2 stage" dispatching issues?
    - **We envision 1 stage at the 4 satellite PSAPs and 2 stage at Central.**
  - "Cross Service" vs. "Service Specific" dispatching issues?
    - **We envision separate call taking, police dispatch and fire dispatch workstations at Central and combined workstations at the 4 satellite PSAPs, but we also envision all staff cross trained in all tasks.**
  - Civilian vs. sworn staff issues?
    - **We envision all civilian staff as in the one PSAP model**
  - Universal call talker vs. Service Specific call taker issues?
    - **We envision all staff cross trained.**
  - State law and regulation issues?"
    - **We see nothing different here than in the other models**
  - Management and control issues?
    - **This represents a decentralized model of how these services could be provided. Our template was kind of what Highway Patrols do today. Any**

Highway Patrol <u>could</u> do all their dispatch out of one central place (especially those with a trunked radio system like the OHP) at the State Capitol, but most choose to use remote field dispatch centers. In most of those cases a Sergeant is the PSAP supervisor at the individual remote Post, but he/she reports up to some Lieutenants and a Captain at HQ who make the policies, do the hiring and training, etc.

- **This is a model that has not been implemented on a county basis in any places we are familiar with, although we think the Los Angeles County Sheriff does have some Sheriff Substations that are zoned radio dispatch posts for portions of their vast coverage area.**
- **This model removes all direct control of dispatch and its staff from the individual departments that exercise said control today, while it also removes all costs for dispatch from those agencies.**

- Cost and funding issues?
  - **Operating in this dispersed model would cost over twice as much as using the same equipment, same quality staff, same supervisors and largely the same procedures as would be employed in the single PSAP model.**
  - **Assuming the same funding constraints and approaches were applied to this model as were applied to the one PSAP model, the only issue would be where to raise 2.1 times as much money under this model.**

<u>The "Ad Hoc Arrangements" Model</u>

As it relates to the model that would have individual agencies making individual arrangements with whichever other agencies they chose to deal with for some form of PSAP service provision, we think that it not fruitful to go through this high level analysis. The main reasons for this are that the costs, service arrangements, service standards, staffing, training, supervision of employees and so forth that would be a part of such arrangements are wide open to modification and negotiation between the two (or more) agencies involved.

However, we feel that by having provided these more controlled environment cost models, individual agencies will have some benchmarks to use to consider whether or not they want to enter into such discussions. Clearly, any and all agencies are without constraint if they want to talk to or merge their PSAP operations in some fashion with some neighbor or non-neighbor agency.

<u>The "Virtually Consolidated PSAP" Model:</u>

This model flows from a thorough understanding of how the above models, especially the "one big PSAP" models work. Simply put, with technology as it is today, if we had a nice, new, well equipped big single PSAP, it would have:

- An all-agency CAD system, into which each and every incident requiring a response would be entered
- Numerous workstations off that CAD, each of which could be configured "on-the-fly" to perform any relevant dispatch function such as:
  - Police dispatch in for whatever zone area needs it
  - Fire dispatch, countywide, or by some fire zone if they are developed
  - EMS dispatch with the same caveats
  - Supervisory role (can do everything and anything at any time)
  - 911 call taking and even entry roles
- A networked 911 and 7 digit phone equipment system such that inbound calls could be routed to the "longest idle" operator, and/or such that some calls could

be routed to one group of operators in one "pod" in the room (calls from the West side, for example) and so forth.

- A radio system such that any workstation that needed radio access could have it and access whatever dispatch-authorized talkgroup/channel on the system they needed to access.
- An audio recording system such that any word said on any phone line or device and many of the radio system channels or talkgroups could be available from some, many or any workstation for instant recall or after-the-fact investigation and evidence recall.
- And all of these features and functions would be accessible as a function of the individual employees "sign-on authorization". If the employee was only authorized to do some things, and NOT answer 911 calls, for example, this would mean that the MECC's administrative assistant would have a CAD and phone system sign that did not have a YES in "911 access" and "CAD incident creation access" tables.

Now, having imagined this environment in one large PSAP, remember that all of the above is interconnected by high speed data cabling within the facility. So, if we could handle the entire workload that we described in the one big PSAP using this technology, that means that if we could use long enough and secure enough wires, we could have our many workstations in far distant parts of our main building. It also means that we could have them in buildings that were blocks to miles away.

This is the physical and electronic essence of Virtual Consolidation, but it does not describe the operational essence.

The operational essence has already been alluded to in our discussion of the "networked Regional PSAP" model, where some of the workstations and functions are extended out from a Central PSAP to four satellite PSAPs. But it requires more definition here.

The best way to describe how this would work in an operational sense is to take an individual incident. Here are the incident specifics and how it would be handled:

1. 911 caller is using a cell phone while in a car
2. Caller dials 911 while moving South on I-75 at Exit 58 (Needmore Road), in what appears to be an unincorporated part of the County.
3. Caller is reporting a drive-by shooting incident that took place on Wyse Road, near I-75 in Vandalia.
4. Caller's cell signal hits a tower sector antenna that is in Dayton (Needmore Road @ Wagoner Ford Road) and is programmed for selective routing to the Dayton PD.
5. Call is answered at the Dayton PD. Caller needs fire/rescue and police, caller has now pulled over on the side of I-75, south if MM 58 in the unincorporated County.
6. DPD call taker enters the incident into (our now networked) CAD as a "Drive By Shooting" and indicates that a Police (P) fire (F) and EMS (E) response are required.
7. (Our now networked) CAD routes the Police version of this incident to the MCSO dispatcher in their PSAP facility. It is received and an MCSO deputy is assigned. CAD routes the fire/EMS version of this incident to

the Vandalia PSAP as they dispatch the fire/EMS responders for this location. (Not sure if they do, but assume they do for this example)

8. The assigned MSCO deputy and the assigned Vandalia Fire Rescue units are told to switch to radio talk group "OPS 5" for their response so they can coordinate their approach to this scene, not knowing if the shooter is still out and about. Under ICS, the MCSO dispatcher assumes radio command of the response.
9. Moments later a 2nd wireless 911 call is placed by a witness to this drive-by-shooting. The witness is following the armed and dangerous suspect who is driving at an extremely high rate of speed Northeastward on SR 202 entering Huber Heights. Because the witness is near Huber Heights, their cell call is received at a tower in Huber Heights and selectively routed to the Huber Heights PSAP where it is answered. Upon answering the Huber Heights dispatcher hears "shooting, near I-75 at exit 58" from the caller and notices an "event in process" on the CAD screen labeled "Drive By Shooting, Exit 58 @ I-75" and "pulls up" that event to look at. It is readily apparent that it is the same event for which this entry was created by the DPD call taker a few minutes earlier. The HHPD dispatcher "ADDS REMARKS" to the event and also UPDATES the event to include the Huber Heights suspect location component to it, which causes for a clone of that event to pop up on the CAD screen of her partner dispatcher *(as well as the MCSO and Vandalia fire dispatchers miles away),* who sends Huber Heights police officers to intercept the suspect and perform a high-risk felony stop. They are told to switch to OPS 5 on their radios to coordinate with the MCSO deputy at the victim's location as well.

The preceding event just touches the surface of how this system could work, and when it works this way it is truly like a symphony being well played. We could have gone on for several pages and added elements to the scenario, such as a wired 911 call routing to the Vandalia PSAP, which is all of a suddenly overwhelmed with wired 911 calls regarding a house fire, and they can't answer this new 911 call in less than 15 seconds, so it automatically routed over to the Englewood PSAP where, BEFORE THEY ANSWER IT, they know they are getting it because Vandalia is "all busied out", but we think the point has been made.

All that it would take to cause for such a system to be implemented is the political will, a couple million dollars and an organizational vehicle under which the work could be guided. That's why we think the CECCA should be created, no matter what PSAP configuration you decide on. That's also why we think you should pursue some wire line or wireless 911 surcharge direct revenues, and/or some dedicated tax levy to fund this type of coordination and, perhaps, eventual consolidation.

Virtual PSAP Consolidation could be implemented in today's dispersed PSAP location and fragmented PSAP control and funding models. **But it won't save you any money whatsoever**, unless you consider money not spent to purchase somewhat equivalent non-networked systems for each of the separate PSAPs today. But, the degree to which that money would be saved is a function of whether or when the locality was going to spend it soon, or at all.

And clearly, Virtual PSAP Consolidation does not save you any money from a recurring personnel perspective, nor does it provide more and better PSAP supervision, better staffing, or more training.

Facilities and Equipment Issues:

In any process like this, participants are eager to know things like:

Where would the PSAP(s) be located?

Would we have to build new facilities or can some facility be converted/re-used?

How much would such a space(s) cost?

What new equipment do we need?

How many PSAP dispatch consoles?

How many 911 operator workstations?

How much new radio infrastructure (if any)

What new other infrastructure?

We think that these questions are too premature to be dealt with at this point. As the previous pages have detailed at great length, there are many substantive political, control, operational, funding, human resources and procedural issues that need to be met head on and it needs to be determined if a an agreeable outcome to them is a potential.

It would be our suggestion that these discussions proceed apace to see if these issues can be resolved. If they can, then the facilities issues become relevant and can be addressed. If they can't, then you will not have unnecessarily spent time and political capital on facilities issues.

Clearly, we have established a framework (which if deemed acceptable) which can save Montgomery County taxpayers well over $5 million per year in recurring costs, and with savings such as that every year, year after year, long term cost decisions regarding debt service on facilities and technologies can become much easier.

Back-up PSAP?

We think that if you implement the networked systems we have referenced, the need for full blown, back-up facilities can be greatly diminished or eliminated. Remember, we are talking about a VIRTUAL NETWORK. Under that model, a group of PSAP employees could congregate anywhere where 25 people can place two or three laptops PC with high speed internet access in folding tables and resume operations, pretty much like they were back in their home PSAP. Access to all primary system components can be remoted in this fashion. For example, using such a technology, we have answered wireless 911 calls LIVE in Boston, MA that had been dialed in East St. Louis, IL and were routed to an East St. Louis PSAP position, except that we were that East St. Louis PSAP position in a room in the Boston convention center.

Forming The CECCA:

Throughout the past many pages there have been numerous references to the CECCA. By way of reminder, that is the **C**ountywide **E**mergency **C**ommunications **C**oordinating **A**uthority. It could also be called the MECCA, substituting Montgomery for Countywide.

We see this body as being a high-level ownership, oversight and policy development authority. We envision it being officially formed by Resolution of the County Board of Commissioners and being chartered to do several things. Some of these might be:

- Own and manage the countywide radio system(s)
- Be the chief customer to the Telco for 911 services
- Plan for and monitor 911 systems and own and manage the hardware
- Own, and manage a countywide CAD system
- Own and manage a networked countywide (accessible by all via password) logging recorder system.
- Own and manage a countywide microwave network
- Own and manage a countywide mobile data system
- Be the primary trainer for all in areas of communications
- Be the planner, implementer and trainer in interoperability issues and systems.
- Own and manage the Virtual PSAP systems and network
- Own, staff and manage several Central and Regional PSAPs, as to be determined
- Own, staff and manage a Countywide consolidated PSAP
- Be the vehicle/organizational umbrella under which future public safety coordinating activities might take place, such as:
  - Training (all types, all agencies)
  - Planning
  - Purchasing (merge with the Fire/EMS Alliance, perhaps?)
  - Equipment sharing
  - Consolidated/countywide records

We see the membership of this body being a combination of public safety professionals and local policy makers and elected officials. A potential model: (8 Public Safety – shaded – 6 elected, 4 technical/management types)

1. Chair:	County Sheriff (In recognition of 307.63)
2. Vice-Chair:	Mayor of Dayton
3. Member	County Commissioner
4. Member	Dayton City Council member
5. Member	Township Board Chair
6. Member	City Mayor (other than Dayton)
7. Member:	City Manager
8. Member:	Police Chief (selected by Chief's Assn.)
9. Member:	Fire Chief (selected by Chief's Assn.)
10. Member:	Police Officer (selected by FOP)
11. Member:	FT fire fighter (selected by IAFF)
12. Member:	Deputy Sheriff (selected by Deputies Assn)
13. Member:	Volunteer fire fighter (selected by them)
14. Member:	Public Safety Communications Operator
15. Member:	Municipal finance official
16. Member:	Local government Human Resources manager
17. Member:	Local government IT manager

Conclusion:

After these many pages, we believe the interested parties in Montgomery County now have a good overview of all of the issues and their many nuances and are equipped to proceed with an informed decision making process.

In some regards, Montgomery County is far better situated than many counterpart counties throughout the USA. Two of these major reasons are the nearly universal countywide trunked radio system and the significant shared usage of the Sheriff's CAD system for not only law enforcement, but fire and EMS use as well. Both of these developments give you a major head start in exploring these PSAP service issues. Absent them, many jurisdictions would find the obstacles too great to pursue this work.

As your planning and exploratory processes unfold, GeoComm would like to offer whatever assistance you may require, and we thank you for the opportunity to participate to this point.

Finally, we have learned that many of the 3,066 counties throughout the U.S.A. are going through very similar processes and explorations. Over the past year+ we have collected a wide variety of news reports about how and what these agencies are doing. We have compiled them into a digest which is available for on-line reading or downloading from the GeoComm website. Merely go to:

http://www.geo-comm.com/reports.php

When you get there, click on PSAP CONSOLIDATION ARTICLES

You will then have a choice of selecting OPEN to read the *pdf file on line or SAVE to save it to your hard drive to read later and/or print out.

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Attorney General
Betty D. Montgomery

Opinion 95-004
March 28, 1995

The Honorable Lowell S. Petersen
Ottawa County Prosecuting Attorney
122 West Second Street
Port Clinton, Ohio 43452

Dear Prosecutor Petersen:

You have requested an opinion concerning the authority of a board of county commissioners to dispatch the police officers, firemen, and emergency medical personnel of townships and municipal corporations located within the county. Your request presents the following questions:

> 1. May a Board of County Commissioners provide dispatching services for police departments, fire departments, and emergency medical service units operated by municipalities and townships within its boundaries without a contract providing for reimbursement to the county by the said political subdivisions and may the county expend county general fund money for that purpose?
>
> 2. If the answer to the first question is in the affirmative, is the county required to provide said service at county expense?
>
> 3. May a board of township trustees contract with and pay the county for dispatching services for its police
> department, fire department, and emergency medical service units?
>
> 4. May a city or village contract with and pay the county for dispatching services for its police department, fire department, and emergency medical service units?

I. A Board of County Commissioners May Dispatch the Emergency Personnel of Townships and Municipal Corporations

For ease of discussion, this opinion will consider your first two questions together. These questions concern the authority of a board of county commissioners to use county general fund moneys to dispatch the police officers, firemen, and emergency medical personnel of townships and municipal corporations located within the county.

A. Authority of a Board of County Commissioners:

A board of county commissioners, as a creature of statute, possesses only those powers that are expressly granted by statute or necessarily implied thereby. *State ex rel. Shriver v. Board of Comm'rs,*148 Ohio St. 277, 74 N.E.2d 248 (1947); 1994 Op. Att'y Gen. No. 94-060 at 2-293; 1989 Op. Att'y Gen. No. 89-087 at 2-413. Moreover, with respect to financial transactions, the authority of a board of county commissioners "must be clear and distinctly granted, and, if such authority is of doubtful import, the doubt is resolved against its exercise in all cases where a financial obligation is sought to be imposed upon the county." *State ex rel. Locher v. Menning,* 95 Ohio St. 97, 99, 115 N.E. 571, 572 (1916); *accord* Op. No. 94-060 at 2-293; Op. No. 89-087 at 2-413; 1983 Op. Att'y Gen. No. 83-042 at 2-162. It is, therefore, necessary first to determine whether a board of county commissioners is statutorily

authorized to dispatch the police officers, firemen, and emergency medical personnel of municipal corporations and townships. If the board of county commissioners is so authorized, it then must be determined whether the municipal corporations and townships must reimburse the county for any expenses incurred in operating the dispatching system, or whether it is permissible for the county to use general fund moneys to operate the system.

B. A Board of County Commissioners May Establish a Countywide Public Safety Communications System

R.C. 307.63 authorizes a board of county commissioners to establish a countywide public safety communications system. That section reads, in pertinent part, as follows:

> (A) As used in this section, "countywide public safety communications system" means *a system of communications facilities, equipment, and services that helps to provide immediate field exchange of police, fire, and emergency medical services information between the county and participating states, political subdivisions, and other public entities,* without regard to which jurisdiction holds title to real or personal property used in the system or employs the persons responsible to dispatch emergency personnel using the system.
> (B) A board of county commissioners may establish a countywide public safety communications system. The system shall be operated in accordance with division (B)(1), (2), or (3) of this section. (1) In any county with a population of less than seven hundred fifty thousand, the county sheriff shall operate the Countywide public safety communications system unless, before commencing operation of the system, the sheriff gives written notice to the board of county commissioners that he chooses not to do so. After the board of county commissioners receives such written notice from the sheriff, the board shall operate the system. Once the sheriff gives notice that he chooses not to operate the system, neither he nor any person occupying the office of county sheriff in the future may choose to operate the system at a later date, except as provided in division (B)(3) of this section. (2) In any county with a population of seven hundred fifty thousand or more, the board of county commissioners shall operate the system, unless the board and the county sheriff mutually agree that the sheriff will operate the system. (3) In any county, after the board of county commissioners commences operation of a public safety communications system, if the board chooses to stop operating the system, the county sheriff may operate the system.
> (C) The board of county commissioners may construct, acquire, or contract for communications facilities for the public safety communications system. In addition, the board may acquire or contract for computers and other equipment in connection with the system, provide equipment to the users of the system, maintain the facilities and equipment, employ personnel or contract for personal services, and exercise other powers as necessary to operate the system. The board may adopt policies or rules for the administration, operation, and maintenance of the system. If the county sheriff is the operator of the system, he may employ personnel in connection with the operation of the system.
> (D) The board of county commissioners may enter into agreements with ... political subdivisions of this state ... concerning the use of the countywide public safety communications system. (Emphasis and footnote added.) A board of county commissioners thus may establish and operate a communications system to provide immediate field exchange of police, fire, and emergency medical services information between the county and participating political subdivisions.

Although R.C. 307.63 does not expressly state that a county may use the countywide public communications system to dispatch emergency personnel, it is reasonable to conclude from the language of R.C. 307.63 that the General Assembly intended to authorize a board of county commissioners to establish and operate a countywide dispatching network, and to make that network available to any political subdivision that enters into an agreement concerning the use of that network. *See, e.g.,* R.C. 307.63(A) (a public communication system qualifies as a countywide public safety communication system regardless of which "jurisdiction .employs the persons responsible to dispatch emergency personnel using the system"); R.C. 307.63(G) (nothing in R.C. 307.63 "requires a county sheriff in a county with a population of less than seven hundred fifty thousand to use the public safety communications system to dispatch his employees"). Further, since it is axiomatic that townships and municipal corporations are political subdivisions, *see New Orleans v. Clark,* 95 U.S. 644, 654 (1877); *Tuber v. Perkins,* 6 Ohio St. 2d 155, 157, 216 N.E.2d 877, 879 (1966); 1972 Op. Att'y Gen. No. 72-035, a board of county

commissioners is authorized, pursuant to R.C. 307.63(D), to enter into an agreement with the municipal corporations and townships of the county concerning the use of the countywide public safety communications system. Accordingly, R.C. 307.63 authorizes a board of county commissioners to enter into an agreement with the townships and municipal corporations located within the county whereby the townships and municipal corporations use the countywide public safety communications system to dispatch their police officers, firemen, and emergency medical personnel.

With regard to the authority of a county to charge a municipal corporation or township concerning the use of the countywide public safety communications system, it is a general rule that, if a county provides a service, the county may not charge the political subdivision receiving the service unless there is express statutory authorization for such charge or authority necessarily inferred from an express power. *See, e.g.,* 1982 Op. Att'y Gen. No. 82-011 (syllabus, paragraph one) ("[i]f a service is performed for a public office by an office of county government, whether on a mandatory or discretionary basis, a board of county commissioners may not charge the office receiving such service unless there is express statutory authorization for such charge or authority implied [by] an express power"); 1931 Op. Att'y Gen. No. 3406, vol. II, p. 938 (where a statute provides that an expense be paid out of the county treasury no charge back to the state or any political subdivision in the county may be made); *cf.* 1988 Op. Att'y Gen. No. 88-042 at 2-203 ("[i]t is a general rule that a charge may not be made against a state agency except pursuant to clear statutory authority"). There is no provision within the Revised Code requiring a municipal corporation or township to pay a county for the use of a countywide public safety communications system. Further, the provisions governing the establishment and operation of a countywide public safety communications system may not be read as implying the authority for a county to charge a municipal corporation or township concerning the use of the system. Rather, pursuant to R.C. 5705.19(KK), a board of county commissioners may determine that it is necessary to levy a tax in excess of the ten-mill limitation for a countywide public safety communications system under R.C. 307.63. In light of R.C. 5705.19(KK), it is thus clear that a county may establish and operate a countywide public safety communications system with moneys from the general fund or revenue derived from a tax levied pursuant to R.C. 5705.19(KK) that is deposited into a special fund. *See* R.C. 5705.05 ("[t]he purpose and intent of the general levy for current expenses is to provide one general operating fund derived from taxation from which any expenditures for current expenses of any kind may be made, and the taxing authority of a political subdivision may include in such levy the amounts required for carrying into effect any of the general or special powers granted by law to such subdivision.... The power to include in the general levy for current expenses additional amounts for purposes for which a special tax is authorized shall not affect the right or obligation to levy such special tax"). Therefore, it is unnecessary for the municipal corporations and townships that use the countywide public safety communications system to pay the county for the use of the system.

Accordingly, pursuant to R.C. 307.63, a board of county commissioners may enter into an agreement with the townships and municipal corporations located within the county whereby the townships and municipal corporations use the countywide public safety communications system to dispatch their police officers, firemen, and emergency medical personnel. A board of county commissioners that establishes a countywide public safety communications system may not require municipal corporations and townships that use that communications system to pay the board for the costs it incurs in connection with the operation, maintenance, and management of that system.

C. A Board of County Commissioners May Enter into a Contract Whereby the Board Provides Dispatching Services to Townships and Municipal Corporations

A board of county commissioners also may dispatch the police officers, firemen, and emergency personnel of townships and municipal corporations pursuant to a contract entered into under R.C. 307.15. This section, which authorizes a board of county commissioners to exercise powers of and perform functions on behalf of a township or municipal corporation, provides in relevant part: The board of county commissioners may enter into an agreement with the legislative authority of any municipal corporation, township ... and such legislative authorities may enter into agreements with the board, whereby such board undertakes, and is authorized by the contracting subdivision, to exercise any power, perform any function, or render any service, in behalf of the

contracting subdivision or its legislative authority, which such subdivision or legislative authority may exercise, perform, or render.... Upon the execution of such agreement and within the limitations prescribed by it, the board may exercise the same powers as the contracting subdivision possesses with respect to the performance of any function or the rendering of any service, which, by such agreement, it undertakes to perform or render, and all powers necessary or incidental thereto, as amply as such powers are possessed and exercised by the contracting subdivisions directly....*See generally* R.C. 307.19 (sections of the Revised Code that authorize contracts or agreements among particular classes of subdivisions do not control or limit the making of agreements under R.C. 307.15, "it being intended that such [section] shall be applied as fully as though such other sections did not exist"). Thus, pursuant to an agreement made under the authority of R.C. 307.15, a board of county commissioners may undertake to dispatch police officers, firemen, and emergency medical personnel on behalf of a township or municipal corporation provided the municipal corporation or township has the authority to dispatch emergency personnel on its own behalf. *See, e.g.,* 1991 Op. Att'y Gen. No. 91-037 at 2-204 ("a board of county commissioners may enter into an agreement with a municipal corporation or township located within that county, under R.C. 307.15, to grant narcotics agents the same police powers exercised by the peace officers of the contracting municipal corporation or township").

Municipal corporations and townships are statutorily authorized to provide police protection, fire protection, and emergency medical services to their citizens. R.C. 505.37-.42 (authorizing a township to provide fire protection and emergency medical service); R.C. 505.48-.55 (authorizing a township to provide police protection); R.C. 509.01 (a township may appoint constables to preserve the township peace); R.C. 715.05 ("[a]ll municipal corporations may organize and maintain police and fire departments"); R.C. 737.11 ("[t]he police force of a municipal corporation shall preserve the peace, protect persons and property, and obey and enforce all ordinances of the legislative authority of the municipal corporation, all criminal laws of the state and the United States, all court orders issued and consent agreements approved pursuant to sections 2919.26 and 3113.31 of the Revised Code, and all anti-stalking protection orders issued pursuant to section 2903.213 of the Revised Code. The fire department shall protect the lives and property of the people in case of fire. Both the police and fire departments shall perform any other duties that are provided by ordinance"); R.C. 5705.19(I) (a township or municipal corporation may levy a special tax for the purpose of providing a fire department or to purchase ambulance equipment, or to provide ambulance, paramedic, or other emergency medical services operated by a fire department); 1967 Op. Att'y Gen. No. 67-078 (syllabus, paragraph two) (R.C. 715.372 authorizes a city to provide ambulance service as a related adjunct of hospital service). Insofar as the power to dispatch emergency personnel is necessarily implied by the authority to provide police protection, fire protection, and emergency medical service, municipal corporations and townships are authorized to establish a dispatching network in order to provide police and fire protection, and emergency medical care. Therefore, R.C. 307.15 authorizes a board of county commissioners to enter into an agreement with a municipal corporation or township located within that county whereby the county dispatches the police officers, firemen, and emergency medical services personnel of the municipal corporation or township. *See* 1963 Op. Att'y Gen. No. 16, p. 88 (pursuant to an agreement under R.C. 307.15 and R.C. 307.16, a board of county commissioners may operate a base radio station to receive and transmit official fire activity messages from and to the fire departments of political subdivisions in the county); 1939 Op. Att'y Gen. No. 827, vol. II, p. 1061 (syllabus, paragraph one) ("[a] county may, by contract, furnish to a municipality information over the county broadcasting system for a sum to be agreed upon between the proper county and municipal authorities").

I turn now to the issue whether a municipal corporation or township must reimburse the county for any expenses incurred by the county in dispatching the emergency personnel of the municipal corporation or township under a contract entered into pursuant to R.C. 307.15. The method of payment to be used in agreements entered into under R.C. 307.15 is governed by R.C. 307.16, which states in pertinent part:

Every agreement entered into under sections 307.14 to 307.19, inclusive, of the Revised Code, shall provide, either in specific terms or by prescribing a method for determining the amounts, for any payments to be made by the contracting subdivision into the county treasury, or by the county to the municipal corporation, in consideration of the performance of the agreement. Research discloses contrary opinions with regard to the interpretation and application of R.C. 307.16. In *Ranz v. Youngstown,* 140 Ohio St. 477, 45 N.E.2d 767 (1942), the Ohio Supreme Court concluded that G.C. 2450-3 (now R.C. 307.16) "does not prescribe a mandatory form *requiring* payments to be made by the contracting subdivision into the county treasury. It does prescribe

a mandatory form to be followed in case the agreement provides *for* such payments." *Id.* (syllabus, paragraph nine). In contrast, one of my predecessors, in a situation similar to the one presented in your letter, examined the language of R.C. 307.16 and determined that a board of county commissioners may not establish and operate a base radio station for fire communications between the various fire departments of the county under the authority of R.C. 307.15 unless the participating political subdivisions finance the establishment and operation of the base radio station. 1963 Op. Att'y Gen. No. 270, p. 344. In so concluding, 1963 Op. No. 270 stated at pages 346-47 as follows: It might be thought that [R.C. 307.16] requires payments to be made into the county treasury by a contracting subdivision where, by agreement, the county is to exercise some power on behalf of such subdivision. As to this exact language in the General Code, however the Supreme Court of Ohio has said: "Section 2450.3, General Code, does not prescribe a mandatory form *requiring* payments to be made by the contracting subdivision into the county treasury. It does prescribe a mandatory form to be followed in case the agreement provides *for* such payments." *(State ex rel Ranz v. Youngstown et al.,* 140 Ohio St., 477 (1942) Syllabus #9) (Emphasis added)[.] I might conclude, therefore, that payment by the contracting subdivision is not a necessary part of all agreements made under authority of Sections 307.15 and 307.16, *supra.* In the *Ranz Case, supra,* the county had made expenditures for poor relief within a municipality pursuant to agreement and the court ruled that reimbursement therefor could not be compelled. As is apparent from the court's opinion, however, the county had ample authority to expend its funds for poor relief even in the absence of the agreement. I am of the opinion, therefore, that this case does not stand for the proposition that agreements pursuant to Sections 307.15 and 307.16, *supra,* convey general authority to expend county funds, but that if the board of county commissioners does have independent authority to make the expenditure, funds sufficient to finance the undertaking in question would have to be provided by the contracting subdivisions in the agreement. Thus, 1963 Op. No. 270 and *Ranz v. Youngstown* are in conflict on the issue whether a municipal corporation or township is required to reimburse a county for services rendered under a contract entered into pursuant to R.C. 307.15. It is a well-settled rule of law that opinions of the Attorney General do not have the binding precedential effect of a court decision. *See Spitaleri v. Metro RTA,* 67 Ohio App. 2d 57, 62, 426 N.E.2d 183, 186 (Summit County 1980); *State ex rel. Freshcorn v. Board of Educ. Blanchester Local School Dist.,* 89 Ohio App. 196, 200, 101 N.E.2d 137, 139 (Clinton County 1951); 1989 Op. Att'y Gen. No. 89-098 at 2- 478. As stated in 1927 Op. Att'y Gen. No. 397, vol. I, p. 689 at 689: Courts are by the law made such final arbiters and when the law is interpreted by a court the interpretation given to it by the court becomes the law within the jurisdiction of the court, and such interpretation as the court gives to the law should be followed and acted upon, at least within the territory over which such court has jurisdiction.
Accord Op. No. 89-098 at 2-478; 1939 Op. Att'y Gen. No. 534, vol. I, p. 670 at 673. Accordingly, "when a court of competent jurisdiction has rendered a decision which is in conflict with an opinion of the Attorney General, the interpretation of the statute by the court of competent jurisdiction should be followed." Op. No. 89-098 at 2-479; *see, e.g.,* 1939 Op. No. 534; 1927 Op. No. 397. In light of *Ranz v. Youngstown,* it appears that neither a municipal corporation nor township is required to reimburse the county for any expenses it incurs in dispatching the emergency personnel of the municipal corporation or township under a contract entered into pursuant to R.C. 307.15. Rather, the allocation of costs incurred by the county in dispatching the emergency personnel of a township or municipal corporation is properly a matter that should be negotiated by the county and township or municipal corporation as a part of the agreement for dispatching services that they enter into pursuant to R.C. 307.15. *See* 1990 Op. Att'y Gen. No. 90-025.

Therefore, R.C. 307.15 authorizes a board of county commissioners to enter into an agreement with a municipal corporation or township located within that county whereby the county dispatches the police officers, firemen, and emergency medical services personnel of the municipal corporation or township. The allocation of costs incurred by the county in providing dispatching services to the municipal corporation or township is a matter that may be negotiated by the county and the municipal corporation or township as a part of the agreement for dispatching services that they enter into pursuant to R.C. 307.15.

II. Authority of a Township and Municipal Corporation to Enter into a Contract with a County for Dispatching Services

Your third and fourth questions concern the authority of a township and municipal corporation to enter into a contract with the board of county commissioners whereby the township or municipal corporation

pays the county to dispatch the police officers, firemen, and emergency medical services personnel of the township or municipal corporation. Except as provided in R.C. 307.63 and R.C. 307.15, no provision of the Revised Code authorizes a township or municipal corporation to enter into such a contract with a board of county commissioners. R.C. 311.29(B), however, authorizes a township and municipal corporation to enter into a contract with the county sheriff whereby the sheriff undertakes and is authorized by the township or municipal corporation to perform any police function, exercise any police power, or render any police service in behalf of the township or municipal corporation, which such township or municipal corporation may perform, exercise, or render. Any contract entered into under R.C. 311.29(B) must "provide for the reimbursement of the county for the costs incurred by the sheriff for such policing including, but not limited to, ... the cost of equipment and supplies used in such policing, to the extent that such equipment and supplies are not directly furnished by the [township or municipal corporation]." R.C. 311.29(D). As stated above, a township and municipal corporation are authorized to dispatch their police officers.

Thus, pursuant to R.C. 311.29, a township or municipal corporation may enter into a contract with the county sheriff whereby the sheriff dispatches the police officers of the township or municipal corporation, and the township or municipal corporation pays the county for the costs it incurs under the contract.

In addition, a township may enter into a contract with the county sheriff upon such terms as are agreed to by them for use of the services or equipment of the county sheriff. R.C. 505.43; *see also* R.C. 505.50 (a board of township trustees may enter into a contract with "the county sheriff upon any terms that are mutually agreed upon for the provision of police protection services or additional police protection services either on a regular basis or for additional protection in times of emergency"). Because a county sheriff is authorized to preserve the public peace in his county, R.C. 311.07(A), a sheriff is authorized to maintain and operate a dispatching network. *See United States v. Laub Baking Co.,* 283 F. Supp. 217, 220 (N.D. Ohio 1968) (a county sheriff "possesses the authority to engage in activities which are reasonably necessary for the due and efficient exercise of the powers expressly granted to him"). Thus, pursuant to R.C. 505.43, the county sheriff and township may enter into a contract upon such terms as may be agreed to by them whereby the sheriff permits the township police to use his dispatching network.3 *See* Op. No. 90-025 (syllabus) ("[p]ursuant to R.C. 505.43, a township and a village may enter into a contract upon such terms as may be agreed to by them whereby the village provides police protection to the township. The township may permit village police personnel the use of the township's electronic dispatching network in conjunction with such police protection"). The allocation of costs incurred by the county sheriff in providing the use of his dispatching network to the township is properly a matter that should be negotiated by the township and county sheriff as a part of the contract that they enter into pursuant to R.C. 505.43. *See* Op. No. 90-025 at 2-94 ("the allocation of costs incurred by the township in permitting village police personnel the use of the township's dispatching network is properly a matter that should be negotiated by the village and the township as a part of the contract for police protection that they enter into pursuant to R.C. 505.43").

Accordingly, pursuant to R.C. 505.43, a township may enter into a contract with the county sheriff whereby the sheriff dispatches the police officers of the township, and may negotiate as part of the contract the allocation of costs incurred by the sheriff under the contract.

III. Conclusion

Based on the foregoing, it is my opinion and you are hereby advised as follows:

1. Pursuant to R.C. 307.63, a board of county commissioners may enter into an agreement with the townships and municipal corporations located within the county whereby the townships and municipal corporations use the countywide public safety communications system to dispatch their police officers, firemen, and emergency medical personnel. A board of county commissioners that establishes a countywide public safety communications system pursuant to R.C. 307.63 may not require municipal corporations and townships that use the system to pay the board for the costs it incurs in connection with the operation, maintenance, and management of that system.

2. R.C. 307.15 authorizes a board of county commissioners to enter into an agreement with a municipal corporation or township located within that county whereby the county dispatches the police officers, firemen, and emergency medical personnel of the municipal corporation or township. The allocation of costs incurred by the county in providing dispatching services to the municipal corporation or township is a matter that may be negotiated by the county and the municipal corporation or township as a part of the agreement for dispatching services that they enter into pursuant to R.C. 307.15.

3. Pursuant to R.C. 311.29, a township or municipal corporation may enter into a contract with the county sheriff whereby the sheriff dispatches the police officers of the township or municipal corporation, and the township or municipal corporation pays the county for the costs it incurs under the contract.

4. Pursuant to R.C. 505.43, a township may enter into a contract with the county sheriff whereby the sheriff dispatches the police officers of the township, and may negotiate as part of the contract the allocation of costs incurred by the sheriff under the contract.

Respectfully,
BETTY D. MONTGOMERY
Attorney General

Attorney General
Betty D. Montgomery

Opinion 98-032
August 31, 1998

The Honorable W. Duncan Whitney
Delaware County Prosecuting Attorney
15 West Winter Street
Delaware, Ohio 43015

Dear Prosecutor Whitney:

You have requested an opinion concerning the operation of a countywide 911 system and a countywide public safety communications system. Specifically, you wish to know the following:

> 1. Is a countywide 911 system a countywide public safety communications system, as defined by R.C. 307.63(A)?
>
> 2. If a countywide 911 system constitutes a countywide public safety communications system, as defined by R.C. 307.63(A), is the 911 system operated in accordance with the provisions of R.C. 307.63(F)?
>
> 3. If a countywide 911 system is expanded into a countywide public safety communications system, as defined by R.C. 307.63(A), is the 911 system operated by the board of county commissioners or the county sheriff?
>
> 4. If a countywide 911 system is funded by a tax levy adopted pursuant to R.C. 5705.19(BB), may the funds generated by that levy be used to fund a countywide public safety communications system, as defined by R.C. 307.63 (A)?

Your first question asks whether a countywide 911 system is a countywide public safety communications system, as defined by R.C. 307.63(A). Pursuant to R.C. 307.63, a board of county commissioners is authorized to establish and maintain a countywide public safety communications system. *See* 1995 Op. Att'y Gen. No. 95-004 at 2-15 and 2-16. For purposes of R.C. 307.63, a "countywide public safety communications system" is defined as follows:

> "[C]ountywide public safety communications system" means a system of communications facilities, equipment, and services that helps to provide immediate field exchange of police, fire, and emergency medical services information between the county and participating states, political subdivisions, and other public entities, without regard to which jurisdiction holds title to real or personal property used in the system or employs the persons responsible to dispatch emergency personnel using the system.
>
> R.C. 307.63(A).1 A countywide public safety communications system thus is created and operated by a county to provide immediate field exchange of police, fire, and emergency medical services information between the county and participating political subdivisions. 1995 Op. Att'y Gen. No. 95-004 at 2-16.

Provisions pertaining to the creation and operation of a countywide 911 system are set forth in R.C. 4931.40-.53. Pursuant to these provisions, a county is authorized to operate and maintain a 911 system. *See generally State ex rel. DiFrangia v. Trumbull County Bd. of Comm'rs,* 99 Ohio App. 3d 569, 573, 651 N.E.2d 447, 450 (Trumbull

County 1994) (a county has "the authority to purchase and maintain the equipment required for a countywide 911 system"), *appeal dismissed,* 72 Ohio St. 1421, 648 N.E.2d 513 (1995). As used in R.C. 4931.40-.53, "' 911 system' means a system through which individuals can request emergency service using the telephone number 911." R.C. 4931.40(A). In addition, a county that operates a 911 system may provide basic or enhanced 911 service within its territory. *See* R.C. 4931.41(B) ("[a] countywide 911 system may be a basic or enhanced 911 system, or a combination of the two"); R.C. 4931.43(B)(2) (the proposal on the implementation of a countywide 911 system and the final plan adopted by the 911 planning committee shall specify whether basic or enhanced 911 service will be provided).

The terms "basic 911" and "enhanced 911" are defined by R.C. 4931.40(B) and (C), respectively, for purposes of R.C. 4931.40-.53:

> (B) "Basic 911" means a 911 system in which a caller provides information on the nature of and the location of an emergency, and the personnel receiving the call must determine the appropriate emergency service provider to respond at that location.
>
> (C) "Enhanced 911" means a 911 system in which the telephone network system automatically provides to personnel receiving the call, immediately on answering the 911 call, information on the location and the telephone number from which the call is being made, and routes the call to emergency service providers that serve the location from which the call is made.

Pursuant to the definitions of "911 service," "basic 911," and "enhanced 911," as used in R.C. 4931.40-.53, it is readily apparent that a countywide 911 system is a communications system whereby the public can request emergency service. The primary purpose of a countywide 911 system is to dispatch the appropriate emergency service provider to a location. A countywide 911 system is not used to provide immediate field exchange of police, fire, and emergency medical services information between the county and other political subdivisions. Accordingly, because a countywide 911 system is not used to provide immediate field exchange of police, fire, and emergency medical services information between the county and other subdivisions, a countywide 911 system created and operated pursuant to R.C. 4931.40-.53 is not a Countywide public safety communications system, as defined by R.C. 307.63(A).

Your second question asks whether, if a countywide 911 system constitutes a countywide public safety communications system, as defined by R.C. 307.63(A), is the 911 system operated in accordance with the provisions of R.C. 307.63(F). As determined above, however, a countywide 911 system is not a countywide public safety communications system, as defined by R.C. 307.63(A). It is, therefore, unnecessary for us to advise whether a countywide 911 system is operated in accordance with the provisions of R.C. 307.63(F).
Your third question asks whether, if a countywide 911 system is expanded Into a countywide public safety communications system, as defined by R.C. 307.63(A), is the 911 system operated by the board of county commissioners or the county sheriff. Resolution of this question requires that we first determine whether a countywide 911 system may be expanded into a countywide public safety communications system.

It is a general rule that "[c]ounties … may exercise only those powers affirmatively granted by the General Assembly." *Geauga County Bd. of Comm'rs v. Munn Road Sand & Gravel*, 67 Ohio St. 3d 579, 582, 621 N.E.2d 696, 699 (1993). No provision within the Revised Code states that a county is authorized to expand a countywide 911 system into a countywide public safety communications system. To the contrary, a review of the provisions authorizing counties to create and operate 911 systems, R.C. 4931.40-.53, and public safety communications systems, R.C. 307.63, indicates that such authority has not been granted by the General Assembly to counties. As stated above, countywide 911 systems and countywide public safety communications systems serve different purposes. A countywide 911 system is used by the citizens of the county to contact and obtain the services of an emergency service provider, while a countywide public safety communications system is used to provide immediate field exchange of police, fire, and emergency medical services information between the county and other political subdivisions. *See* note one, *supra*. Accordingly, use of a countywide 911 system to provide immediate field exchange of police, fire, and emergency medical services information between the county and

other subdivisions would be for a purpose not contemplated by the General Assembly when it enacted R.C. 4931.40-.53. *See generally Henry v. Central Nat'l Bank*, 16 Ohio St. 2d 16, 242 N.E.2d 342 (1968) (syllabus, paragraph two) (the primary purpose in the interpretation of statutes is to determine legislative intent). In addition, the use of a countywide 911 system in such a manner would permit a county to provide immediate field exchange of police, fire, and emergency medical services information between the county and other subdivisions in a manner different than that prescribed by the General Assembly in R.C. 307.63. *See generally Akron Transp. Co. v. Glander*, 155 Ohio St. 471, 480, 99 N.E.2d 493, 497 (1951) ("when a statute directs a thing may be done by a specified means or in a particular manner it may not be done by other means or in a different manner"); 1987 Op. Att'y Gen. No. 87-050 (determining that a statute that permits a board of township trustees to sell by public auction township property it no longer needs does not permit the sale of such property by any method other than public auction). Finally, county moneys that are intended to be used to finance a countywide 911 system would be used for a purpose other than to dispatch the appropriate emergency service provider to a location.2 *See generally State ex rel. Walton v. Edmondson*, 89 Ohio St. 351, 363-64, 106 N.E. 41, 45 (1914) (where the expenditure of public moneys is limited by statute, the moneys may only be spent in accordance with the statutory provisions). Based on the provisions of R.C. 4931.40-.53 and R.C. 307.63, it is our opinion that a county thus lacks statutory authority to use a countywide 911 system to perform the functions of a countywide public safety communications system. Therefore, a countywide 911 system created and operated pursuant to R.C. 4931.40-.53 may not be expanded into a countywide public safety communications system, as defined by R.C. 307.63(A).

Your final question asks whether, if a countywide 911 system is funded by a tax levy adopted pursuant to R.C. 5705.19(BB), may the funds generated by that levy be used to fund a countywide public safety communications system, as defined by R.C. 307.63(A). R.C. 5705.19(BB) authorizes a county to levy a tax "[f]or the establishment and operation of a 911 system, as defined in section 4931.40 of the Revised Code." A tax levied by a county pursuant to R.C. 5705.19(BB) for the establishment and operation of a countywide 911 system is a special levy. *See* R.C. 5705.19(PP) (a resolution to levy a tax in excess of the ten-mill limitation "shall be confined to the purpose or purposes described in one division of [R.C. 5705.19], to which the revenue derived therefrom shall be applied").

In 1998 Op. Att'y Gen. No. 98-023, slip op. at 7, we addressed the use of tax moneys derived from a special levy and stated: Proceeds derived from a special levy must, in accordance with R.C. 5705.10, "be credited to a special fund for the purpose for which the levy was made" and "be used only for the purposes for which such fund is established." *See* 1988 Op. Att'y Gen. No. 88-101 at 2-500; 1986 Op. Att'y Gen. No. 86-103; *see also* Ohio Const. art. XII, 5 ("[n]o tax shall be levied, except in pursuance of law; and every law imposing a tax shall state, distinctly, the object of the same, to which only, it shall be applied"). *See Clark Restaurant Co. v. Evatt*, 146 Ohio St. 86, 64 N.E.2d 113 (1945) (syllabus, paragraph three) ("[i]n the construction and application of taxing statutes, their provisions cannot be extended by implication beyond the clear import of the language used; nor can their operation be so enlarged as to embrace subjects not specifically enumerated"); 1977 Op. Att'y Gen. No. 77-097 at 2-323 ("the purpose set forth in the levy resolution, as in the case of any taxing statute, must be strictly construed, and may not be enlarged to embrace subjects not specifically enumerated therein"). Accordingly, the proceeds from a tax levied under R.C. 5705.19(BB) may be expended only for the purposes authorized therein. The proceeds of a tax levied by a county pursuant to R.C. 705.19(BB) may be used to establish and operate a countywide 911 system. R.C. 5705.19(BB) does not authorize the expenditure of tax proceeds for a countywide public safety communications system, as defined by R.C. 307.63(A).

Moreover, R.C. 5705.19(KK) authorizes a county to levy a tax "[f]or a countywide public safety communications system under section 307.63 of the Revised Code." Thus, the proceeds of a tax levied under R.C. 5705.19(KK) are to be used to fund a countywide public safety communications system, rather than the proceeds of a tax levied under R.C. 5705.19(BB). The proceeds of a tax levy passed pursuant to R.C. 5705.19(BB) for the establishment and operation of a countywide 911 system, therefore, may not be used to fund a countywide public safety communications system, as defined by R.C. 307.63(A).

Based on the foregoing, it is my opinion, and you are hereby advised as follows:

1. A countywide 911 system created and operated pursuant to R.C. 4931.40-.53 is not a countywide public safety communications system, as defined by R.C. 307.63(A).

2. A countywide 911 system created and operated pursuant to R.C. 4931.40-.53 may not be expanded into a countywide public safety communications system, as defined by R.C. 307.63(A).

3. Proceeds of a tax levy passed pursuant to R.C. 5705.19(BB) for the establishment and operation of a countywide 911 system may not be used to fund a countywide public safety communications system, as defined by R.C. 307.63(A).

Respectfully,
BETTY D. MONTGOMERY
Attorney General

Attorney General
Betty D. Montgomery

Opinion 99-017
February 17, 1999

The Honorable Kenneth Egbert, Jr.
Seneca County Prosecuting Attorney
1 Jefferson Street
Tiffin, Ohio 44883

Dear Prosecutor Egbert:

Your predecessor requested an opinion regarding the establishment of a countywide public safety communications system whenever a county operates or proposes to operate a countywide 911 system.

Currently, Seneca County does not operate a countywide public safety communications system. The county, however, has established a countywide 911 system pursuant to R.C. 4931.40-.53 that has one public safety answering point at the office of the county sheriff.1 In order to better serve the public, the county has proposed the establishment of a new countywide 911 system with public safety answering points at the office of the county sheriff and the police department of the City of Tiffin. In light of these facts, your predecessor asked us to address the following questions:

> 1. Is a board of county commissioners required to establish a countywide public safety communications system?
>
> 2. If a county operates or proposes to operate a countywide 911 system, is a board of county commissioners required to establish a countywide public safety communications system?

Provisions concerning the creation and operation of a countywide public safety communications system are set forth in R.C. 307.63. *See also* R.C. 5705.19(KK) (a county may levy a tax "[f]or a countywide public safety communications system under section 307.63 of the Revised Code"). Pursuant to this section, "[a] board of county commissioners *may* establish a countywide public safety communications system."2 R.C. 307.63(B) (emphasis added). *See* 1995 Op. Att'y Gen. No. 95-004 at 2-15 and 2-16. It is a fundamental rule of statutory interpretation that the use of the word "may" in a statute should be given its ordinary meaning, unless a contrary intention is clearly indicated by the context of the statute. *State ex rel. City of Niles v. Bernard*, 53 Ohio St. 2d 31, 34, 372 N.E.2d 339, 341 (1978); *Dorrian v. Scioto Conservancy Dist.*, 27 Ohio St. 2d 102, 107, 271 N.E.2d 834, 837 (1971); *State ex rel. Dworken v. Court of Common Pleas of Cuyahoga County*, 131 Ohio St. 23, 25, 1 N.E.2d 138, 139 (1936). *See generally* R.C. 1.42 (words and phrases shall be construed according to the rules of grammar and common usage). As explained in *Dorrian v. Scioto Conservancy Dist.*, 27 Ohio St. 2d at 107-08, 271 N.E.2d at 837-38 (1971):

The statutory use of the word "may" is generally construed to make the provision in which it is contained optional, permissive, or discretionary, at least where there is nothing in the language or in the sense or policy of the provision to require an unusual interpretation. The word "shall" is usually interpreted to make the provision in which it is contained mandatory, especially if frequently repeated. Ordinarily, the words "shall" and "may," when used in statutes, are not used interchangeably or synonymously. However, in order to serve the basic aim of construction of a statute– to arrive at and give effect to the intent of the General Assembly– it is sometimes necessary to give to the words "may" and "shall" as used in a statute, meanings different from those given them in

ordinary usage, and one may be construed to have the meaning of the other. But when this construction is necessary, the intention of the General Assembly that they shall be so construed must clearly appear from a general view of the statute under consideration, as where the manifest sense and intent of the statute require the one to be substituted for the other. (Citations omitted.) Nothing in the language of R.C. 307.63 or elsewhere in the Revised Code evidences a legislative intent to impose a mandatory duty upon a board of county commissioners to establish a countywide public safety communications system. Absent such legislative intent, the term "may," as used in R.C. 307.63 (B), must be accorded its common meaning. *See State ex rel. City of Niles v. Bernard*; *Dorrian v. Scioto Conservancy Dist.*; *State ex rel. Dworken v. Court of Common Pleas of Cuyahoga County.* Because the word "may," as used in R.C. 307.63(B), is to be understood in its ordinary sense, it must be concluded that R.C. 307.63(B) does not require a board of county commissioners to establish a countywide public safety communications system. Instead, the power conferred upon the board of county commissioners pursuant to R.C. 307.63(B) is permissive or discretionary. In other words, pursuant to R.C. 307.63(B), a board of county commissioners is authorized, but not required, to establish a countywide public safety communications system.

Your predecessor's second question asks whether a board of county commissioners is required to establish a countywide public safety communications system when the county operates or proposes to operate a countywide 911 system. A review of R.C. 4931.40-.53, which provide for the creation and operation of countywide 911 systems, discloses no provision requiring a board of county commissioners to establish a countywide public safety communications system when the county operates or proposes to operate a countywide 911 system. In fact, countywide public safety communications systems and countywide 911 systems serve distinctly different purposes.

As stated in 1998 Op. Att'y Gen. No. 98-032 at 2-180, which concluded that a countywide 911 system is not a countywide public safety communications system: Pursuant to the definitions of "911 service," "basic 911," and "enhanced 911," as used in R.C. 4931.40-.53, it is readily apparent that a countywide 911 system is a communications system whereby the public can request emergency service. The primary purpose of a countywide 911 system is to dispatch the appropriate emergency service provider to a location. A countywide 911 system is not used to provide immediate field exchange of police, fire, and emergency medical services information between the county and other political subdivisions. Accordingly, because a countywide 911 system is not used to provide immediate field exchange of police, fire, and emergency medical services information between the county and other subdivisions, a countywide 911 system created
and operated pursuant to R.C. 4931.40-.53 is not a countywide public safety communications system, as defined by R.C. 307.63(A).

The operation of a countywide 911 system thus is not dependent upon the simultaneous operation of a countywide public safety communications system. In addition, as determined above, R.C. 307.63 does not impose a mandatory duty upon a board of county commissioners to establish a countywide public safety communications system. Accordingly, a county that operates or proposes to operate a countywide 911 system is not required to establish a countywide public safety communications system.

In conclusion, it is my opinion, and you are hereby advised as follows:

1. A board of county commissioners is not required to establish a countywide public safety communications system, as defined by R.C. 307.63(A).

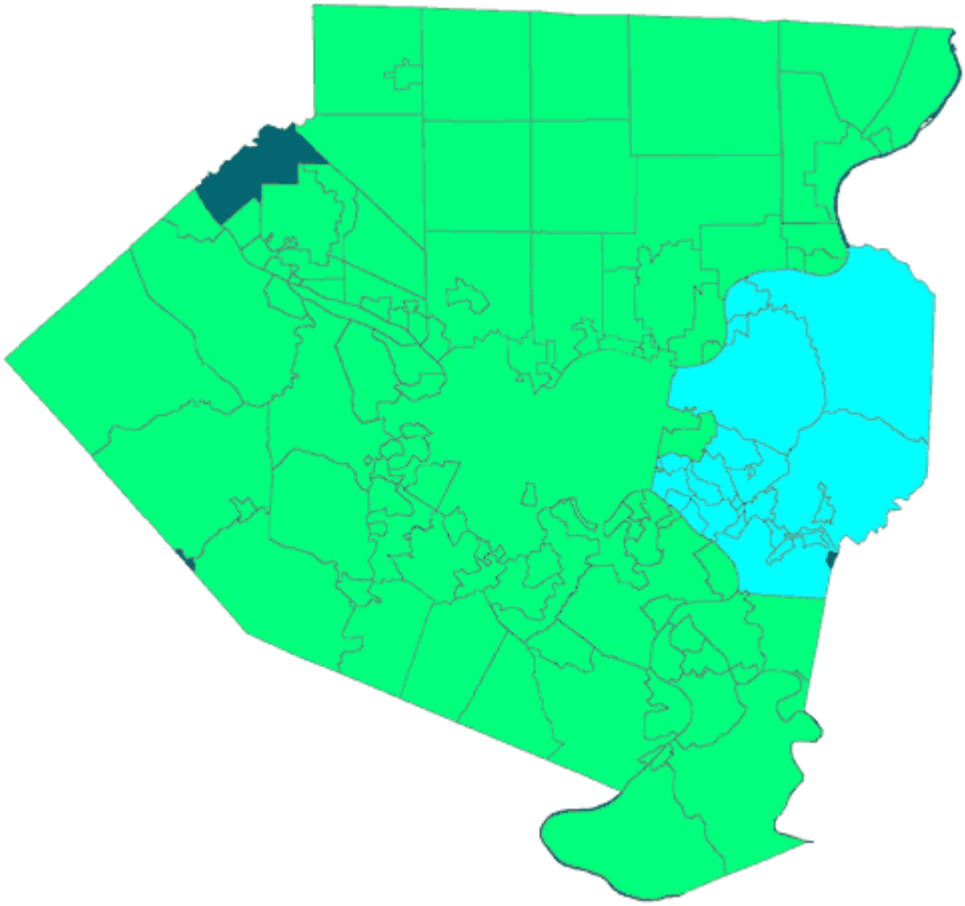
2. A county that operates or proposes to operate a countywide 911 system pursuant to R.C. 4931.40-.53 is not required to establish a countywide public safety communications system, as defined by R.C. 307.63(A).

Respectfully,
BETTY D. MONTGOMERY
Attorney General

Emergency Services

911 Administration
400 North Lexington Street • Pittsburgh, PA 15208-2521
Phone: (412) 473-1000 • Fax: (412) 473-2589
ems@county.allegheny.pa.us

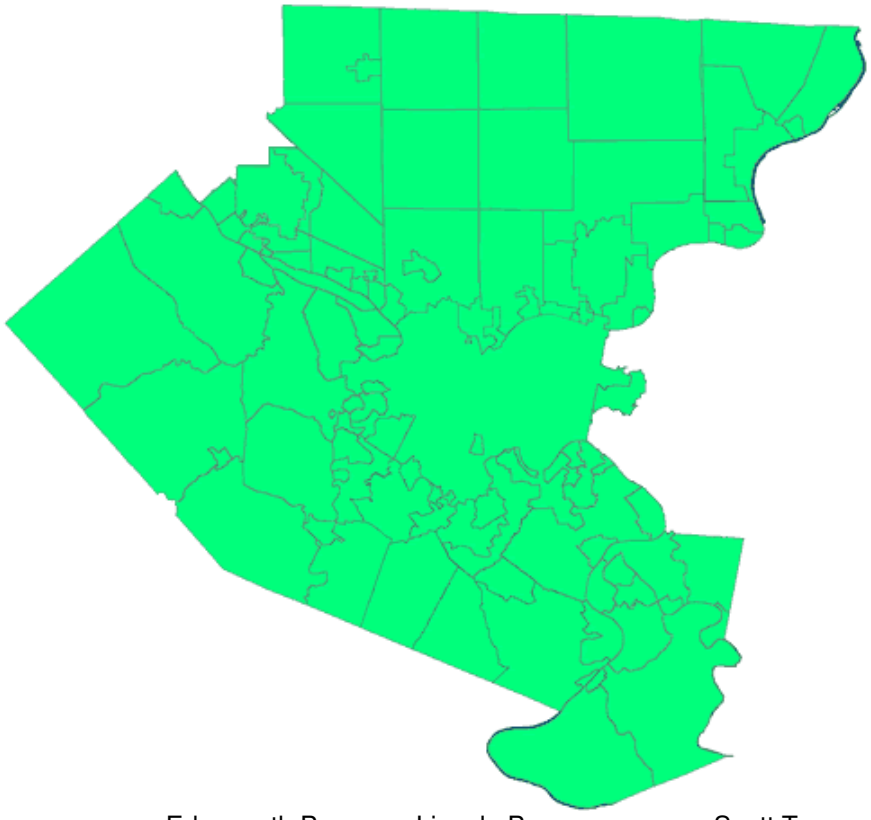
Public Safety Answering Points
Coverage by Municipality



PSAP Zone

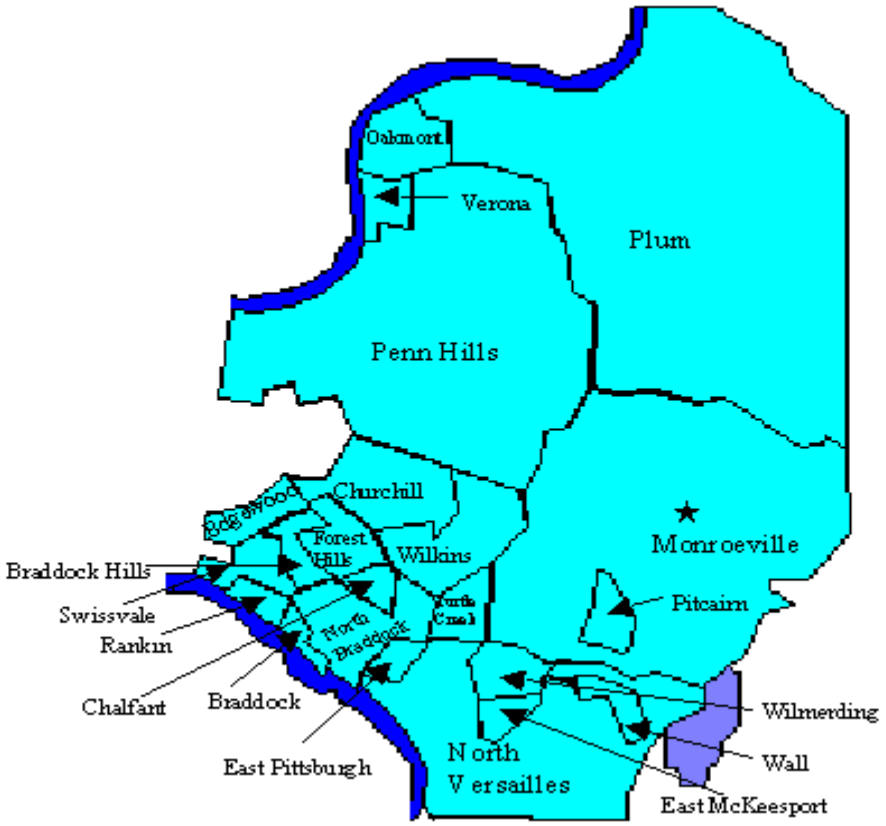
- Allegheny County 911
- Eastern Regional
- Outside County

Allegheny County 911 PSAP Jurisdictional Coverage:



Aleppo Twp.	Edgeworth Boro	Lincoln Boro	Scott Twp.
Aspinwall Boro	Elizabeth Boro	Marshall Twp.	Sewickley Boro
Avalon Boro	Elizabeth Twp.	Town of McCandless	Sewickley Hts. Boro
Baldwin Boro	Emsworth Boro	City of McKeesport	Sewickley Hills Boro
Baldwin Twp.	Etna Boro	McKees Rocks Boro	Shaler Twp.
Bellevue Boro	Fawn Twp.	Millvale Boro	Sharpsburg Boro
Ben Avon Boro	Findlay Twp.	Moon Twp. Boro	South Fayette Twp.
Ben Avon Hts. Boro	Forward Twp.	Mt. Lebanon Muni.	South Park Twp.
Bethel Park Muni.	Fox Chapel Boro	Mt. Oliver Boro	South Versailles Twp.
Blawnox Boro	Franklin Park Boro	Munhall Boro	Springdale Boro
Brackenridge Boro	Frazer Twp.	Neville Twp.	Springdale Twp.
Bradford Woods Boro	Glassport Boro	North Fayette Twp.	Stowe Twp.
Brentwood Boro	Glenfield Boro	Oakdale Boro	Tarentum Boro
Bridgeville Boro	Green Tree Boro	O'Hara Twp.	Thornburg Boro
Carnegie Boro	Hampton Twp.	Ohio Twp.	Upper St. Clair Twp.
Castle Shannon Boro	Harmar Twp.	Osborne Boro	Versailles Boro
Cheswick Boro	Harrison Twp.	Pennsbury Village Boro	West Deer Twp.
City of Clairton	Haysville Boro	Pine Twp.	West Elizabeth Boro
Collier Twp.	Heidelberg Boro	City of Pittsburgh	West Homestead Boro
Coraopolis Boro	Homestead Boro	Pleasant Hills Boro	West Mifflin Boro
Crafton Boro	Indiana Twp.	Port Vue Boro	West View Boro
Crescent Twp.	Ingram Boro	Reserve Twp.	Whitaker Boro
Dormont Boro	Jefferson Hills Boro	Richland Twp.	White Oak Boro
Dravosburg Boro	Kennedy Twp.	Robinson Twp.	Whitehall Boro
City of Duquesne	Kilbuck Twp.	Ross Twp.	Wilkinsburg Boro
East Deer Twp.	Liberty Boro	Rosslyn Farms Boro	

Eastern Regional Communications Center 911 PSAP Jurisdictional Coverage:



Eastern Regional Communications Center
c/o Municipality of Monroeville
2700 Monroeville Boulevard, Monroeville, PA 15146
Phone: 412-856-1000/ Fax: 412-856-3366
Henry Hoffman, Communications Director

ACTIVITY & COST DATA COLLECTION SHEET
MONTGOMERY COUNTY, OHIO 9-1-1 PSAPS

(Add as many sheets as needed)

PSAP Name_____Contact person_____

Contact Phone:_____; E-mail:_____; Fax:_____

Is your PSAP a "PRIMARY PSAP" (1st "answerer" of 9-1-1 calls) or a "Secondary PSAP" (one to which already answered 9-1-1 calls are transferred)?

_____ Primary; _____ Secondary; _____Calls transferred to our 7 digit line only

A. _____ # 7 digit phone calls answered by PSAP per year.
Try a 2 week "sample survey" if annual # not known

- Is PSAP "general phone operator" for this agency 24 x 7? ____Yes ____No
  - Specify details:_____

7 digit Breakout by day and time available? ____Yes ____No (Attach if available)

B. _____ # 9-1-1 telephone calls answered by your PSAP per year.
(Info should be available from your E911 service provider)

Breakout by day and time available? _____Yes _____No (Attach if available)

C. _____ # of NCIC/OJIN inquiries run per yr. ***(State may have data)***

Breakout by day and time available? _____Yes _____No (Attach if available)

D. _____ # of NCIC/OJIN entries done per year. ***(Avail. From State)***

E. _____ # of "dispatched events" per year.

Use this definition: An "EVENT" is an incident to which an emergency service responder is told to respond, or which a responder comes across in the field, regardless of whether or not a crime or incident or accident report is generated.

Breakout by day and time available? _____Yes_____No (Attach if available)

F. _____ # other quantifiable and verifiable activities handled @ PSAP/yr.

Specify these activities. *(Examples: "walk-ins" assisted @ window; persons fingerprinted; accident reports sold/provided over counter; DL or other checks done for counter visitors; tow calls placed, etc.)*

G. Is PSAP "service counter/window" available to public 24 x 7? ____ Yes ____ No

- Is there another "receptionist" position staffed at any time? ___Yes ___ No

Specify:_____

H. Number of FT dispatch/911 operator staff: _____

I. Number of PT dispatch/911 operator staff: _____

J. FY **2005** annual expenditures for PSAP operations: $_____

a. Personnel portion of this expenditure: $_____

b. Equipment portion of expenditure: $_____

c. Other expenses (specify) portion: $_____

K. Wages/salaries:

a. In terms of $/hour, please provide the following for 2005 for your personnel classified as "911 dispatchers" or whatever title you use for these roles:

i. Starting hourly wage: $_____/hour

ii. Top hourly wage: $_____/hour

iii. Number of "Steps" between starting and top wage: _____

iv. Time from starting to top pay step: _____yrs

v. Any "shift differential pay"? ____Yes ___No

1. IF YES, describe: _____

vi. Any "holiday pay"? ____Yes ____No

1. IF YES, describe: _____

vii. Any "longevity" type pay? ____Yes ____No

1. IF YES, describe: _____

viii. Number of scheduled work hours per year for FT: _____

L. Benefits:

i. All enrolled in the OPERS public employees pension plan? __Yes __No

ii. If "NO", then what pension plan? _____(Attach details)

1. Pension plans other than state? __Yes __No
2. If YES, then what are they: _____
   a. (Attach details)

iii. Are they covered by a 401K type program? _____Yes ____ No

iv. Briefly describe health and/or dental insurance benefits:

_____

_____

v. What is the vacation accrual rate per pay period? _____

vi. What is the sick leave accrual rate per pay period? _____

vii. Are these positions covered by a labor agreement? ____Yes ___No

If YES, name of union: _____

Can you provide a copy of the current labor agreement? If so, please mail or fax it to us.

viii. Please describe any other "benefit" you think we should be aware of below:

_____

ix. Does your PSAP have CAD? ____Yes _____No. If yes, vendor:

_____; Contact @ vendor (name and TN):

_____

x. Do you have/use MDTs in vehicles? ____Yes ____No. If yes, how many?_____ If YES, are they linked to CAD? ___Yes ___No.

On added sheets (or below), please provide added information or comments that would help better define the picture of the total workload and activities of your PSAP. For example, if your PSAP staff is involved in the writing/entering of police reports into a Records Management System (RMS), please explain and quantify that activity. A good context for answering this question is to ask yourself, "If our dispatch staff was not here to do _____, then we would either need to have some replacement type of staff to do _____ (because it is critical to do _____ XX hours per day), or we would just live without ____ being done ____hours per day." Now tell us what "_____" is in the previous statement, and how many ____'s you handle per year or how much time you spend handling ____s in a year.

When complete, return to PAUL LINNEE, by ***not later than March 15, 2006*** GeoComm Corp. at fax number 1-612-235-6770 or via U.S. If you need help interpreting any questions, call Paul @ 612-869-6164 or send an e-mail to paull911@aol.com

You can also mail completed surveys to:

Paul Linnee
GeoComm Corp.
5800 Park Avenue
Minneapolis, MN 55417

Montgomery County, OH 9-1-1
Technology Inventory

1. PSAP Name: _____
2. Person completing form:_____
    a. Phone number:_____
    b. E-mail:_____
    c. Fax #:_____
3. Does your agency have Computer Aided Dispatch (CAD)? ___Y ___N
    a. If yes:
        i. Name of software supplier:_____
            1. Name of software: _____
            2. Support contact name/#:_____
        ii. # of workstations_____
        iii. PC or "main frame" based? _____
        iv. Any access from outside PSAP building? _____
        v. Windows based? ____Y _____N
            1. If no, what is OS? _____
4. Does your agency have E9-1-1 telephone equipment? ___Y ___N
    a. If yes
        i. Brand name:_____
            1. Model name _____
        ii. Owned or leased? _____
            1. If leased, from who?_____
            2. Term of lease? _____
        iii. # workstations _____
        iv. When installed: _____
        v. # of 9-1-1 trunks: _____
            1. Any separate wireless trunks? _____ How many?_____
        vi. TDD Present? ____Y ____N
            1. Make and model: _____

vii. ANI printer? ____Y ____N

viii. ALI printer? ____ Y ____N

5. Does your agency <u>today</u> **<u>initially</u>** answer *<u>wireless</u>* 9-1-1 calls?
   a. If YES, are they _____ Phase 0; _____Phase 1; _____Phase 2
6. Does your agency have GIS mapping?
   a. If yes
      i. Interfaced to E9-1-1 for auto plot?
         1. Wired calls? _____
         2. Wireless P1 calls? _____
         3. Wireless P2 calls? _____
      ii. Interfaced to CAD for plot after CAD event entry?
         1. Wired calls? _____
         2. Wireless P1 calls? _____
         3. Wireless P2 calls? _____
   b. Status of GIS map data?
      i. Centerline data is MSAG valid? ___Y ____N
      ii. Point file? ____Y ____ N
         1. If Yes, how updated? _____
7. Do you have computerized Records Management System (RMS)?
   a. ***<u>This not CAD but CAD may be a part of RMS</u>***
   b. If YES
      i. Make and model: _____
      ii. Shared with others or just your agency? _____
      iii. List modules you use:
         1. _____
         2. _____
         3. _____
         4. _____
         5. _____
         6. _____
         7. _____

c. Is dispatch a main entry point for data? ___ Y ___ N
    i. If yes. Which types of data? _____

8. Does your agency have Mobile Data Terminals ___Y ___N
    a. If Yes
        i. Make and model _____
        ii. Interfaced to NCIC through State of Ohio? ____Y ____ N
        iii. Interfaced to agency's CAD? ___ Y ____N
        iv. Interfaced to agency's RMS? ___ Y ____N
        v. Over what radio medium do they operate? _____
        vi. Are they "dumb" MDTs, or laptop MDCs? _____
9. Does your agency have Automatic Vehicle Location (AVL)? ____Y ____ N
10. Two way radio system elements:
    a. Does PSAP have control console(s)? ____Y ____N
        i. Make and model: _____
    b. How many RF channels controlled in console? _____
    c. Which channels:
        i. _____
        ii. _____
        iii. _____
        iv. _____
        v. _____
        vi. _____
        vii. _____
    d. Describe the radio channels controlled above and what they are used for, whether they are repeated or simplex, whether or not they have satellite receivers. etc. :
        i.
        ii.
        iii.
        iv.
        v.

vi.

vii.

viii.

ix.

x.

xi.

e. Are any of the radio channels "scrambled" or encrypted? ___Y ___N?
   i. Which ones: _____

f. Is/are there radio channels over which you can inter-operate and communicate with other departments and agencies? ___ Y ____ N
   i. What are they and with whom?

PLEASE PROVIDE COPIES OF ALL RELEVANT FCC RADIO LICENSES

g. What radio frequencies is your agency licensed for?
   i. _____MHz. Function: _____
   ii. _____MHz. Function: _____
   iii. _____MHz. Function: _____
   iv. _____MHz. Function: _____
   v. _____MHz. Function: _____
   vi.
   vii.
   viii.
   ix.

11. Does your PSAP monitor closed circuit TV? ____ Y ____ N
    a. If yes, what do you monitor? _____
12. Does your PSAP monitor any "private alarms" (burglar, fire, etc.) ____ Y ____N
    a. If yes, how many and under what general policies?

13. Does your PSAP answer 7 digit phone lines? ____ Y ____N
    a. If YES, which ones:
       i. ____-_____ and its function is: _____

ii. _____-_____ and its function is: _____
iii. _____-_____ and its function is: _____
iv. _____-_____ and its function is: _____
v. _____-_____ and its function is: _____
vi. _____-_____ and its function is: _____
vii. _____-_____ and its function is: _____
viii. _____-_____ and its function is: _____
ix. _____-_____ and its function is: _____
x. _____-_____ and its function is: _____

14. Do you have an automatic way of counting 7 digit calls? ____Y ____N
15. Do you answer all these 7 digit lines 24 x 7 or are some of them only during "office closed" hours? Explain:

16. Does your PSAP have an NCIC terminal in it? ____Y ____N
    a. If yes:
        i. Are dispatchers the prime operators for inquiries? ___ Y ___ N
        ii. Are dispatchers the prime operators for entries? ___Y ____ N
        iii. Do you do NCIC entries for any other agencies? ___ Y ___ N
17. Do you provide "Emergency Medical Dispatch" (EMD) ____ Y ___ N
    a. If Yes:
        i. Which protocol do you use: _____
        ii. Flip cards or PC based: _____
        iii. Quality control regimen? ___ Y ____N
            1. Explain: _____

Medical direction from: _____

When complete, return to PAUL LINNEE, by ***not later than March 24, 2006*** GeoComm Corp. at fax number 1-612-235-6770 or via U.S. mail. If you need help interpreting any questions, call Paul @ 612-869-6164 or send an e-mail to paull911@aol.com