

ILLINOIS STATE POLICE
Office of the Statewide 9-1-1 Administrator



State of Illinois

Application for
9-1-1 Consolidation Plan

Tazewell County
Emergency Telephone System Board

911 GENERAL INFORMATION

DATE:

Type of Change: <input type="checkbox"/> Consolidation within an ETSB <input type="checkbox"/> Joint ETSB <input type="checkbox"/> Unserved consolidation		
Current System Name:	Population Served	Land Area in Sq Miles
System Name after Consolidation:		

[illegible]

911 System Contact: _____

Street Address: _____

City, State and Zip Code: _____

Office Telephone: _____

Cellular Telephone: _____

Email: _____

Wireless Coverage for Consolidated System:

_____ % Phase II compliant

_____ % Phase I compliant

Please check if applicable:

_____ NG9-1-1 capable

☐ Receive 9-1-1 Text

Receive 9-1-1 Video

VERIFICATION

I, Erin Morey, first being duly sworn upon oath, depose and say that I am 9-1-1 Coordinator, of Tazewell County ETSB; that I have read the foregoing plan by me subscribed and know the contents thereof; that said contents are true in substance and in fact, except as to those matters stated upon information and belief, and as to those, I believe same to be true.

Erin Morey
Erin Morey

Subscribed and sworn to before me

this 27 day of December, 20 17.



A. Hunt

NOTARY PUBLIC, ILLINOIS

9-1-1 SYSTEM PROVIDER LETTER OF INTENT

June 21st, 2017
(Date)

Michael Dawson

(9-1-1 System Provider Company Representative)

CenturyLink

(9-1-1 System Provider Company Name)

1420 Kensington Rd.

(Street Address)

Oak Brook, IL 60523

(City, State, Zip Code)

Dear Mr Dawson :

This letter is to confirm our intent to consolidate our 9-1-1 System PSAPs in Tazewell County, Illinois. Enclosed is your copy of our consolidation plan to be filed with the Department of the Illinois State Police for approval. Thank you for your assistance in this matter.

Sincerely,

Richard Mendenhall, Interim Director

enclosure: Consolidation Plan

PLAN NARRATIVE

Please answer the questions below, and provide a detailed narrative to assist the Statewide 9-1-1 Advisory Board and the Statewide 9-1-1 Administrator with an understanding of the plan as it applies to this application. Please use additional sheets if necessary.

1.	Do all of your PSAPs meet all of the requirements defined in 1325.415 and 1325.515	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
2.	Type of Radio/Telecommunications systems compatible with participating and adjacent agencies. VHF Point-to-Point and IFERN Radio Channel Interoperability See attached Consolidation Report for other channel use.	<input type="checkbox"/> STARCOMM21 <input type="checkbox"/> STARCOMM21 ITTF channels only <input checked="" type="checkbox"/> Other, explain below
3.	Will all PSAPs remaining after consolidation direct dispatch all emergency calls pursuant to section 1324.200b)3)?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
4.	Have you included maps to show the territory covered by the system? See attached Consolidation Report	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Plans submitted without this documentation will be rejected.
5.	Have you included a listing of all telephone companies? See Included Lists.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Plans submitted without this documentation will be rejected.
6.	Have you included a copy of the intergovernmental agreement, ordinance, resolution and/or contracts? See Consolidation Report.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Plans submitted without this documentation will be rejected.
7.	Have you included a list of participating and adjacent agencies? See Included Lists.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Plans submitted without this documentation will be rejected.
8.	Have you included financial information? See Plan Pgs 8-9 and Consolidation Report	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Plans submitted without this documentation will be rejected.
9.	Public education.	<input type="checkbox"/> This is an unserved county that will require public education. (See attachment.) <input checked="" type="checkbox"/> This is an existing 9-1-1 system(s) and does not require public education.
10.	Training.	<input type="checkbox"/> This is an unserved county that will require training. (See attachment.) <input checked="" type="checkbox"/> This is an existing 9-1-1 system(s) and does not require internal training/similar/ongoing training for any GIS annexation or change of policy from agencies served.
11.	Use of TTY's and Training	<input type="checkbox"/> This is a unserved county that will require training. (See attachment.) <input checked="" type="checkbox"/> This is an existing 9-1-1 system(s) and does not require internal training/similar/ongoing training for any GIS annexation or change of policy from agencies served.

12. Have you included call handling and aid outside jurisdictional boundary agreements?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Plans submitted without this documentation will be rejected.
13. Have you included a new system diagram?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Plans submitted without this documentation will be rejected.
13a. Does the new system diagram include all PSAP(s) and backup PSAP location(s)?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Plans submitted without this documentation will be rejected.
14. Have or will all areas within the 9-1-1 system be addressed for the database? If no, please explain.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
<ul style="list-style-type: none"> • All areas within the consolidated PSAP jurisdiction are addressed and maintained by the Tazewell County ETSB. 	
14a. Explain all aspects of the database, i.e., how often is it updated, where is it located, etc.	
<ul style="list-style-type: none"> • 9-1-1 MSAG database maintained by Centurylink on a reported basis. 9-1-1 TIN database locally maintained by Tazewell County ETSB on a daily basis. Database server located in Pekin, Illinois PSAP. 	
15. Who is the 9-1-1 system provider for your 911 system? Please explain whether the system will be legacy based, next generation based or a combination.	
<ul style="list-style-type: none"> • 9-1-1 System Provider is Centurylink on CAMA based trunking. • PSAP consolidation will retain legacy equipment. • Telephone CPE will be upgraded when ISP provides aggregation method for IP based 9-1-1. 	

(Please include additional pages if needed.)

NARRATIVE STATEMENT:

(Provide a detailed summary of system operations for either a consolidation or modified plan. If incorporating an NG9-1-1 solution, please include the additional items listed below pursuant to 1325.205b)12).

- 1) Indicate the name of the certified 9-1-1 system provider being utilized.
- 2) Explain the national standards, protocols and/or operating measures that will be followed.
- 3) Explain what measures have been taken to create a robust, reliable and diverse/redundant network and whether other 9-1-1 Authorities will be sharing the equipment.
- 4) Explain how the existing 9-1-1 traditional legacy wireline, wireless and VoIP network, along with the databases, will interface and/or be transitioned into the NG9-1-1 system.
- 5) Explain how split exchanges will be handled.
- 6) Explain how the databases will be maintained and how address errors will be corrected and updated on a continuing basis.
- 7) Explain who will be responsible for updating and maintaining the data, at a minimum on a daily basis Monday through Friday.
- 8) Explain what security measures will be placed on the IP 9-1-1 network and equipment to safeguard it from malicious attacks or threats to the system operation and what level of confidentiality will be placed on the system in order to keep unauthorized individuals from accessing it.

Plan Narrative **CONSOLIDATION REPORT** attached.

NG9-1-1 not part of consolidation plan, shown as a *Major Initiative* follow-on

FINANCIAL INFORMATION

Name of ETSB(s) that are being dissolved

Total Reserves to be transferred to the Joint ETSB

(Not Applicable: ETSB is Unchanged)

\$ (Not Applicable)

Dispatch Staff and Positions

14 Number of answering positions prior to the consolidation (total for all entities)

16 Number of answering positions in the consolidated system

34 Number of full time dispatchers/call takers prior to the consolidation (total for all entities)

29 Number of full time dispatchers/call takers in the consolidated system

14 Number of part time dispatchers/call takers prior to the consolidation (total for all entities)

0 Number of parttime dispatchers/call takers in the consolidated system

Total amount (and percentage) of salaries paid for by 9-1-1 authority prior to consolidation:

\$ -0- %

Total amount (and percentage) of salaries to be paid for by 9-1-1 authority after consolidation:

\$ -0- %

9-1-1 Network Cost (per year)

a) Total network cost for each entity prior to the consolidation

\$ -0-

b) Total network cost of consolidated system

\$ -0-

c) Net change in network costs:

\$ -0-

If no cost savings in network please explain:

State of Illinois currently paying network costs.

FINANCIAL INFORMATION

Identify Network Costs that the ETSB believes the State will pay for the Consolidated System:

Network Cost	Estimated Amount (per year)
(24) 9-1-1 CAMA Trunks	\$ 21,447.36

Other Consolidation Cost

PSAP, CPE, CAD Equipment, logging recorders	\$ _____
MSAG and Mapping Development or changes	\$ _____
Radio Consoles	\$ _____
Construction or Remodel of PSAP	\$ 493,325
Personnel	\$ _____
Other (Please place total amount in the blank at the right and explain below).	\$ 512,378

Includes PSAP Telephone, Radio, Electrical, supplemental and miscellaneous upgrades to support consolidation. Further detail in attached **CONSOLIDATION REPORT** under *Conversion Costs*. Intended grant application for \$265,878 ETSB Expenses.

Recurring and Nonrecurring Cost (per year)

Estimated nonrecurring cost for consolidation	\$ 1,005,703
a) Recurring costs prior to consolidations (all entities)	\$ 5,016,515
b) Proposed recurring cost for consolidated system	\$ 4,305,902
c) Net change in recurring costs: a – b = c	\$710,613
Revenue (per year)	
Projected surcharge revenue	\$ 1,111,857
Projected revenue from local governments	\$ 3,194,045
Projected revenue from other sources (grants)	\$ -0-
Revenue in reserves	\$ -0-
Total Revenue	\$ 4,305,902

FIVE YEAR STRATEGIC PLAN FOR CONSOLIDATION PLAN

(Provide a detailed summary of the proposed system's operation, including but not limited to, a five-year strategic plan for implementation of the consolidation plan with financial projections)

Narrative:

See attached ***Consolidation Report***. 5-Year Financial Plan on Page 37.

COMMUNITIES SERVED

Provide a list of all communities to be served by the proposed 9-1-1 System. Please include the name of the community and the official mailing address including street address, city and zip code.

USE ADDITIONAL SHEETS AS NECESSARY

City, Town or Village	Street Address, City, Zip Code
Armington	103 South Main St, Armington, IL, 61721
Creve Coeur	103 N Thorncrest Ave. Creve Coeur, IL 61610
Deer Creek	101 W. First Avenue - P.O. Box 38, Deer Creek, IL 61733
Delavan	219 Locust Street, P.O. Box 590, Delavan, IL. 61734
East Peoria	401 W. Washington St. East Peoria, IL 61611
Green Valley	109 E Main St, Green Valley, IL 61534
Hopedale	101 SE Main St, Hopedale, IL 61747
Mackinaw	100 E Fast Ave, Mackinaw, IL 61755
Marquette Heights	715 Lincoln Rd, Marquette Heights, IL 61554
Minier	110 W Central St, Minier, IL 61759
Morton	120 N Main St, Morton, IL 61550
North Pekin	318 N Main St, North Pekin, IL 61554
Pekin	111 South Capitol St, Pekin, IL 61554
South Pekin	209 Main St, South Pekin, IL 61564
Tremont	211 S Sampson St, Tremont, IL 61568
Washington	301 Walnut St, Washington, IL 61571

PARTICIPATING AGENCIES - Police

Provide a list of public safety agencies (Police, Fire, EMS etc.) that are to be dispatched by the 9-1-1 System. Each Agencies land area(s) in square miles and estimated population which will have access to the proposed 9-1-1 System. Do not forget to include County Sheriff's jurisdiction and Illinois State Police Districts. Each agency that appears on this list should also have signed a call handling agreement.

Police 9-1-1 Participant Agencies	Street Address, City, Zip Code	Administrative Telephone	Direct Dispatch	Transfer	Call Relay
Armington PD	103 South Main St, Armington, IL, 61721	309-392-3154	X		
Creve Coeur PD	105 N Thorncrest Ave, Creve Coeur, IL 61610	309-699-9511	X		
Deer Creek PD	101 W 1st Ave, Deer Creek, IL 61733	309-447-6265	X		
Delavan PD	219 Locust Street Delavan IL 61734	309-244-8226	X		
East Peoria PD	201 W Washington St, East Peoria, IL 61611	309-698-4700	X		
Fondulac Park Police	3701 N Main St East Peoria, IL 61611	309-699-3923	X		
Green Valley PD	109 E Main St; Green Valley, IL 61534	309-352-2111	X		
Hopedale PD	101 SE Main St, Hopedale, IL, 61747	309-449-6018	X		
Illinois State Police Dist 8	1265 Lourdes Rd, Metamora, IL 61548	309-383-2133		X	
Mackinaw PD	100 E Fast Ave, Mackinaw, IL 61755	309-359-8914	X		
Marquette Heights PD	715 Lincoln Rd, Marquette Heights, IL 61554	309-382-3404	X		
Minier PD	110 West Central St, Minier, IL, 61759	309-392-2442	X		
Morton PD	375 W Birchwood St, Morton, IL 61550	309-266-6666	X		
North Pekin PD	318 North Main Street Pekin IL 61554	309-382-3412	X		
Pekin PD	111 S Capitol St, Pekin, IL 61554	309.346-3132	X		
Pekin Park District Police	1701 Court St, Pekin, IL 61554	309 353-7220	X		
South Pekin PD	208 Main St, South Pekin, IL 61564	309-348-3656	X		
Tazewell County Sheriff	101 S Capitol St, Pekin, IL 61554	309-477-2250	X		
Tremont PD	211 S Sampson St, Tremont, IL 61568	309-925-3600	X		
Washington PD	115 W Jefferson St, Washington IL, 61571	309-444-2313	X		

PARTICIPATING AGENCIES – Fire/EMS

Provide a list of public safety agencies (Police, Fire, EMS etc.) that are to be dispatched by the 9-1-1 System. Each Agencies land area(s) in square miles and estimated population which will have access to the proposed 9-1-1 System. Do not forget to include County Sheriff's jurisdiction and Illinois State Police Districts. Each agency that appears on this list should also have signed a call handling agreement.

Fire/EMS 9-1-1 Participant Agencies	Street Address, City, Zip Code	Administrative Telephone	Direct Dispatch	Transfer	Call Relay
AMT Ambulance	418 Elizabeth St, Pekin, IL 61554	309-347-6612	X		
Armington FPD	105 W 3rd St, Armington, IL 61721	309-392-2991		X	
Cinncinnati FPD	12805 IL-29, Pekin, IL 61554	309-348-3579	X		
Creve Coeur FD	203 Wagner Dr, Creve Coeur, IL 61610	309-699-9511	X		
Deer Creek FD	402 E 1st Ave, Deer Creek, IL 61733	309-447-6490	X		
Delavan Ambulance Svc	510 S Pine St, Delavan, IL 61734	309-244-8221	X		
Delavan FD	416 Pine St, Delavan, IL 61734	309-244-8221	X		
East Peoria FD	201 W Washington St, East Peoria, IL 61611	309-698-4700	X		
Eureka-Goodfield FPD	211 N Main St, Eureka, IL	309-467-6181		X	
Forman Fire District	205 N Broadway St, Manito, IL 61546	309-968-6902		X	
Germantown Hills FD	313 Prairie Ave, Germantown Hills, IL 61548	309-383-4890	X		
Green Valley FD	100 N Church St, Green Valley, IL 61534	309-352-6200	X		
Hopedale FD	226 NW Main St, Hopedale, IL 61747	309-449-5435	X		
Little Mackinaw FPD	107 E Central Ave, Minier, IL 61759	309-392-2112	X		
Mackinaw FD	104 W Madison St, Mackinaw, IL 61755	309-359-8214	X		
Mackinaw Rescue Squad	104 W Madison St, Mackinaw, IL 61755	309-359-3571	X		
Marquette Heights FD	715 Lincoln Rd, Marquette Heights, IL 61554	309-382-2895	X		
Metamora FD	120 S Davenport St, Metamora, IL 61548	800-859-6826	X		
Minier Rescue Squad	111 West Central Street, Minier, IL 61759	309-531-3241	X		
Minier Village FD	107 W Central St, Minier, IL 61759	309-392-2112	X		
Morton FD	300 W Courtland St, Morton, IL 61550	309-266-7390	X		
North Pekin FD	236 S Main St, North Pekin, IL 61554	309-382-3604	X		
Northern Tazewell FPD	2445 Washington Rd, Washington, IL 61571	309-699-0421	X		
Pekin FD	111 S Capitol St # 100, Pekin, IL 61554	309-346-6314	X		
Rescue 702	300 S Sampson St, Tremont, IL 61568	309-925-5380	X		
Schaefferville FD	1501 Hillview Dr, Pekin, IL 61554	309-201-3457	X		
South Pekin FD	209 W Main St, South Pekin, IL 61564	309-348-3406	X		
Spring Bay FPD	310 W Missouri St, Spring Bay, IL 61611	309-822-0152	X		
Tremont FD	300 S Sampson St, Tremont, IL 61568	309-925-5755	X		
Washington FD	200 N Wilmor Rd, Washington, IL 61571	309-444-8642	X		

ADJACENT AGENCIES LIST

Provide a list of public safety agencies and existing 9-1-1 Systems that are adjacent to the proposed system's boundaries. Each agency that appears on this list should also have signed a call handling agreement and/or aid outside jurisdictional boundaries.

AGENCY	STREET ADDRESS, CITY, ZIP CODE	TELEPHONE NUMBER
Armington Fire Protection District	105 W 3rd St, Armington, IL 61721	309-392-2991
Bartonville Village Fire Dept	5912 S Adams St, Peoria, IL 61607	309-697-2323
Bartonville Police Dept	5918 S Adams St, Bartonville, IL 61607	309-697-2323
Danvers Fire Dept	208 E Main St, Danvers, IL 61732	309-963-4812
Emden FPD	06 Lincoln St; Emden, Illinois 62635	217-376-3261
Emergency 116 Ambulance	120 S Davenport, Metamora, IL 61548	309-367-2640
Fulton County Sheriff	268 W Washington Ave, Lewistown, IL 61542	309-547-2277
Logan County Sheriff	601 Broadway St # 23, Lincoln, IL 62656	217-732-2156
Ludwig Ambulance	220 E Jackson St, Morton, IL 61550	309-263-2181
Manito Police Dept	109 N Broadway St, Manito, IL 61546	309-968-6010
Mason County Sheriff	102 W Market St, Havana, IL 62644	309-543-2231
McLean County Sheriff	104 W Front St, Bloomington, IL 61701	309-888-5030
McLean Fire Dept	209 S Hamilton St, McLean, IL 61754	309-874-2532
Peoria County Sheriff	01 N Maxwell Rd, Peoria, IL 61604	309-697-8515
Peoria Fire Dept	505 NE Monroe St, Peoria, IL 61603	309-494-8700
Peoria Police Dept	600 SW Adams St, Peoria, IL 61602	309-673-4521
Spring Bay Police Dept	201 W Washington St, East Peoria, IL, 61602	309-698-4700
San Jose Fire District	210 S 2nd St, San Jose, IL 62682	309- 247-3412
Stanford Fire Dept	104 W Main St, Stanford, IL 61774	309-379-4341
Woodford County Sheriff	111 E Court St, Eureka, IL 61530	309-467-2375
Caterpillar Corporate Security Services	500 N Morton Ave, Morton, IL 61550	(309) 266-3121

CARRIER LISTING

(Wireline, Wireless, VoIP)

Provide a list of each carrier that will be involved in the proposed system.

(USE ADDITIONAL SHEETS AS NECESSARY)

CARRIERS	STREET ADDRESS, CITY, ZIP CODE	TELEPHONE NUMBER
Ameritech Corporation	30 S Wacker Dr, Chicago, Illinois 60606	800-327-9346
AT&T Mobility (Cingular)	1025 Lenox Park Blvd, Atlanta, GA 30319	800-244-4444
Bandwidth Communications	900 Main Campus Dr, Raleigh, NC 27806	800-808-5150
Comcast/Xfinity	1701 JFK Blvd, Philadelphia, PA 19103	215-583-8078
Gallatin River Communications (CenturyLink)	200 Enterprise Dr, Pekin, IL, 61554	309-477-0380
Insight Communications	810 7th Ave. New York, NY 10019	917-286-2300
IPC Communications	PO Box 3330, Bentonville, AR 72712	479-271-4142
Madison River Telephone Company	103 South Fifth St, Mebane, NC 27302	919-563-1500
McLeod USA	1 Martha's Way, Hiawatha, IA 52233	319-790-7000
NTS Communications	1220 Broadway; Lubbock, Texas 79401	806) 797-0687
Sprint/Nextel/Airgate/UTC	6200 Sprint Pkwy, Overland Park, KS 66251	703-433-4000
T-Mobile/VoiceStream Wireless	12920 SE 38th St, Bellevue, Washington 98006	425-378-4000
US Cellular	8410 W Bryn Mawr Ave, Chicago, IL 60631	773-399-8900
Vonage	23 Main Street Holmdel, NJ 07733	732-528-2600
Verizon	140 West St, New York, NY 10007	212-395-1000

ATTACHMENTS

Ordinance - Documentation that supports the dissolution of the individual ETSB and its replacement with a JOINT ETSB per an intergovernmental agreement once the consolidation plan is approved by the Statewide 9-1-1 Administrator.

(Not Applicable: ETSB is unchanged)

Contracts - The contract for a new 9-1-1 system provider or for NG 9-1-1 service.

(Not Applicable: 9-1-1 System Provider unchanged)

Intergovernmental Agreement - The agreement creating the Joint ETSB.

(Not Applicable: ETSB is unchanged)

Back-up PSAP Agreement - The agreement that establishes back-up service due to interruptions or overflow services between PSAPs.

(Not Applicable: 2-PSAPs, Joint/Single Operation of 2 PSAPs)

Network Diagram - Diagram provided by the 9-1-1 System Provider. Re-evaluate P.O1 grade of Service for cost savings and network efficiency.

(ATTACHED)

Consolidation Report - Details proposed consolidation, methodology, cost and schedule.

(ATTACHED)

Statement of Certification of Continuing Call Handling and Jurisdictional Boundary Agreements – Certifies Agreements are continuously in force. Planned Consolidation makes no changes in Agencies served.

(ATTACHED)

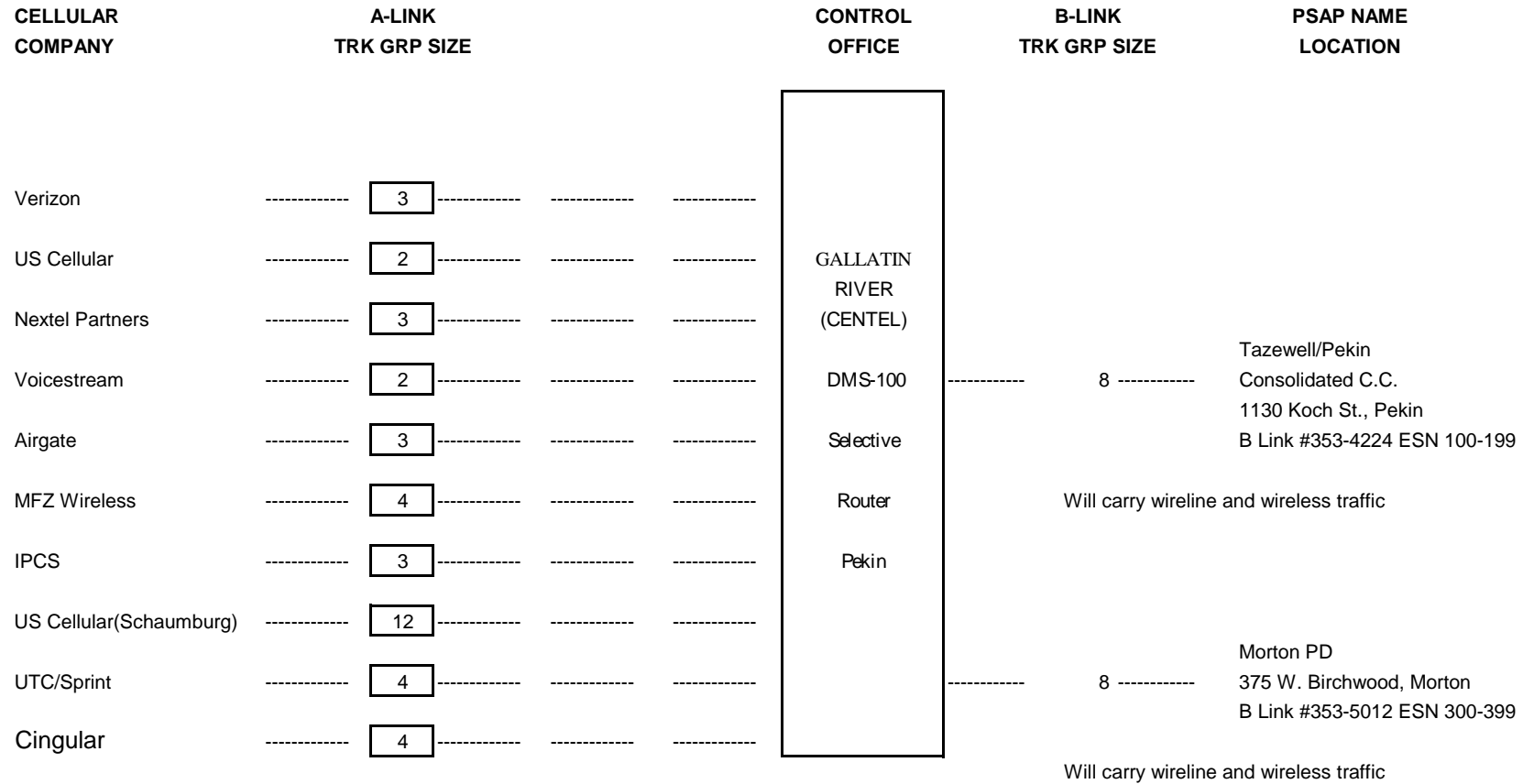
Tazewell County E911 Network Diagram

NPA	NXX	Remotes	End Office/Host NAL	A-Link Trk Grp Size		Control Office	B-Link Trk Grp Size	PSAP Name Location	NAL's Served	
309	244	Delavan	Peoria Jefferson DS0	-----	2	<div><div>Gallatin River</div><div>(Centel) DMS-100</div><div>Selective Router</div><div>Pekin</div><div>TELCO NAMES: AMERITECH - VERIZON - GALLATIN RIVER (CENTEL) -MADISON RIVER (CLEC) - McLEOD USA (CLEC)</div><div>NPAs 309, 217</div></div>				
309	637	+ 671,672 674,676 677,681 686,687	Peoria Jefferson DS1 5 Centrex customers in East Peoria	-----	2 Ameritech Selective Router *					
309	694	+ 698,699 427	East Peoria	-----	4					
309	346	+347,353 477,478	Pekin	-----	5					
309	382	North Pekin	Pekin DS0	-----	2			8	Tazewell/Pekin Consolidated C.C. 1130 Koch St., Pekin B Link #353-4224 ESN 100-199	
309	348	South Pekin	Pekin DS0	-----	2					
309	545	Talbott	Pekin DS0	-----	2					
309	352	Green Valley	Pekin DS0	-----	2					
309	449	Hopedale	Morton DS0	-----	2			8	Morton PD 375 W. Birchwood, Morton B Link #353-5012 ESN 300-399	
309	745		Sunnyland	-----	2					
309	263	+266,284	Morton	-----	3					
309	387	Groveland	Morton DS0	-----	2					
309	925	Tremont	Morton DS0	-----	2					
309	392	Minier	Morton DS0	-----	2					
309	359	Mackinaw	Morton DS0	-----	2			2	Verizon 1ED Router - ESN 512 Logan County	
309	447	Deer Creek	Eureka DS0	-----	2					
309	444	Washington +886	Morton DS0	-----	2			2	Verizon 1ED Router - ESN 510 Woodford County	
217	376	Emden	Normal DS0	-----	2			2	Verizon 1ED Router - ESN 509 McLean County	
Telco Names: Ameritech - Verizon - GallatinRiver - Madison River (CLEC) - McLeod(CLEC)										

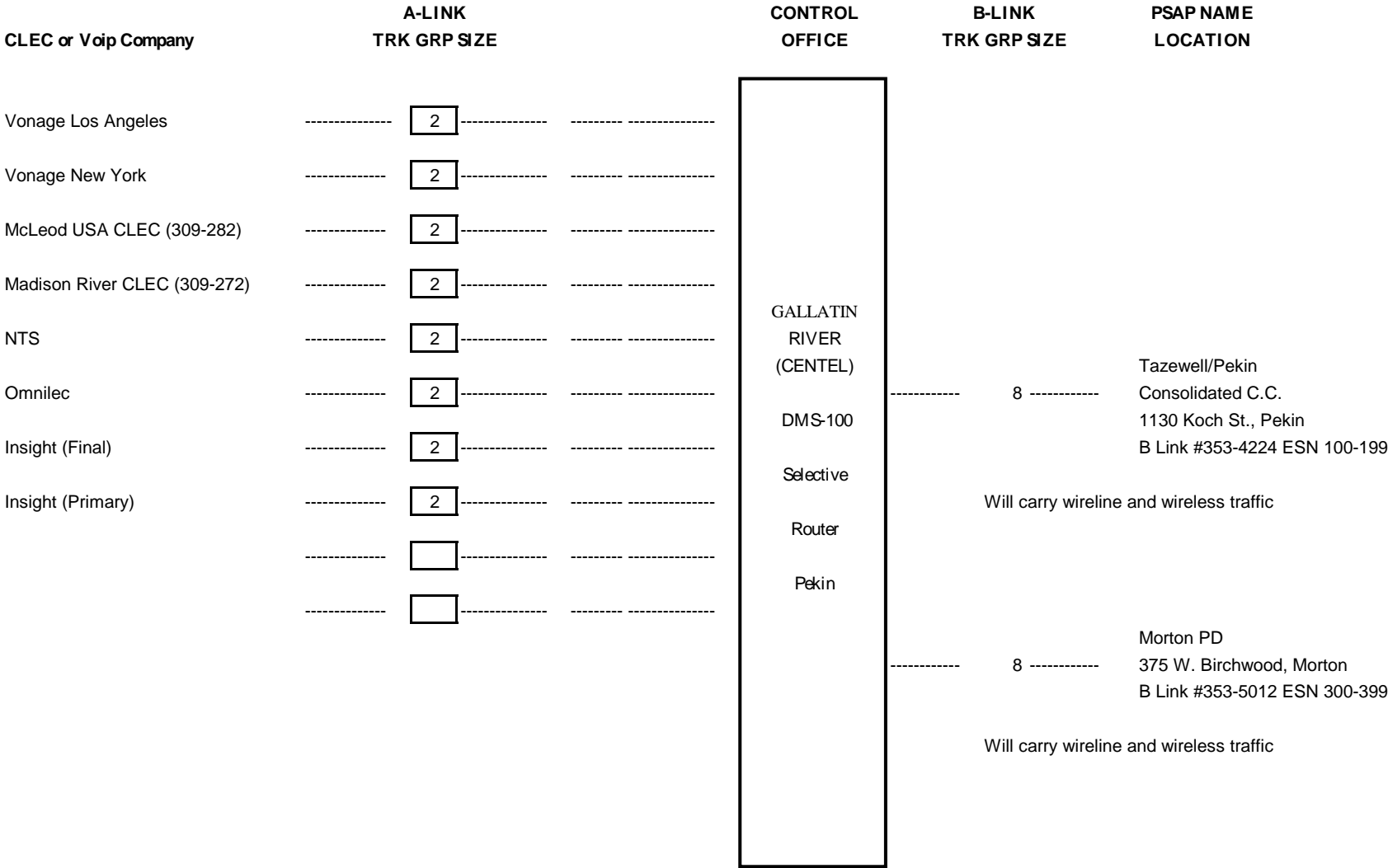
Cutover Date: 2/25/93
 * Ameritech Selective Router Peoria Bluffs
 ** Verizon Selective Router Blomington

Telco Names: Ameritech - Verizon - GallatinRiver - Madison River
 (CLEC) - McLeod(CLEC)

TAZEWELL COUNTY E9-1-1 WIRELESS NETWORK DIAGRAM



TAZEWELL COUNTY E9-1-1 CLEC/VOIP NETWORK DIAGRAM






Tazewell County Emergency Telephone System Board

Tazewell County
9-1-1 Public Safety Answering Point

CONSOLIDATION REPORT

June 21st, 2017



Prepared By: Richard S. Tucker & Associates

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INTRODUCTION

The provision of 9-1-1 emergency telephone answering service in Illinois is a regulated process. The Illinois Commerce Commission (**ICC**) was tasked with regulation oversight of the basic 9-1-1 process in 1975. Legislation was passed in 1987 titled the Emergency Telephone System Act (**ETSA**) which took into account new telephone technology which allowed the display of the caller's number, address and subscriber information. The description of the service changed to "enhanced" 9-1-1.

The ETSA legislation defined the creation of an Emergency Telephone System Board (**ETSB**) to oversee 9-1-1 services within its jurisdiction. This board is independent of other county or municipal government organizations and has public safety officials in its membership. To initiate enhanced 9-1-1, the ETSB was funded by a surcharge placed on wireline telephone services. The amount of the surcharge was approved through a local referendum. Surcharge monies collected by the telephone companies were sent directly to the ETSBs. The spending of the surcharge money was limited to certain expenses defined within the ETSA.

Under the enhanced legislation, the ICC published new 9-1-1 regulations further defining the responsibilities of the ETSB, the quality of 9-1-1 service and other provisions. The ETSBs filed an operating plan in conjunction with the telephone companies providing the 9-1-1 service. Once the plan was approved by the ICC, there was limited direct oversight of the ETSBs or the reporting of how surcharge monies were spent.

As technology progressed from wireline phones to cellular wireless in the 1990's, the ETSA legislation was updated to include a surcharge for wireless phone service. Wireless surcharge was collected by the State of Illinois and distributed to the ETSB's. It was allocated by the number of subscribers within ETSB jurisdictional zip codes. The amount of the wireless surcharge was uniform throughout the state, excepting the City of Chicago.

In the early 2000's, both wireline and wireless technology improved to include broadband data communications. Telephone calls were enabled using data transmission over the Internet, called Voice Over Internet Protocol (**VOIP**). Because there is no additional transport cost to make telephone calls over the Internet, the service became a competitive alternative to wireline service. While VOIP has the ability to call 9-1-1, it was not included in the then current ETSA as a service requiring a surcharge. As VOIP providers became more competitive, services included 9-1-1 and many carriers provided surcharge monies to the ETSB voluntarily.

New forms of messaging including text, photo and video transmission became popular forms of wireless and computer communications replacing traditional voice calls. Because of legacy technology and the final leg provision of the 9-1-1 calls through the wireline network,

the typical 9-1-1 Public Safety Answering Point (**PSAP**) cannot process those advanced forms of data communications if sent to 9-1-1. The recognition of this problem resulted in developing standards for an improved form of technology called Next Generation 9-1-1 (**NG911**).

In 2015, the ETSA legislation was amended to include all existing voice telephone services under a uniform statewide surcharge. ETSB's are required to file a yearly financial statement, the AR-911. It provides accounting for surcharge received and expenditures to audit conformance to law. The implementation of NG911 throughout Illinois was set as a goal with an implementation date of July 1st, 2020.

A new 9-1-1 state governing board was appointed and the regulatory process was moved from the ICC to the Illinois State Police (**ISP**). A statewide Director was appointed to oversee the provision and quality of 9-1-1 services. The Governing Board is tasked with oversight of the statewide migration to NG911. As part of the process to move to NG911, the cost of providing the 9-1-1 connection to the PSAP was taken over by the state. It was no longer an expense to the individual ETSB.

All surcharge money from the phone carriers is now sent first to the State of Illinois, and then distributed to the ETSB's per a formula. To account for the difference in wireline surcharge formally approved by referendum, the legislation provided for the distribution of wireline funds based upon the yearly amount listed on the particular ETSB's 2013 AR-911 financial report. This mechanism reduced the impact of the reduction in surcharge fee to ETSB's which had been collecting a higher amount per line than the new statewide standard.

The balance of the amount collected by the state supports the expenses of operating the ISP regulatory component, the migration to NG911 and certain grants to ETSB's for the provision and improvement of 9-1-1. What is left is distributed monthly to ETSB's as wireless surcharge, proportionately by the number of wireless subscribers within the ETSB's jurisdiction.

In recognition that the state now provides the 9-1-1 delivery to the PSAP and the fact that many smaller PSAPs are not operationally efficient, the legislation calls for the reduction in the number of PSAPs. Many ETSBs must reduce the number of PSAPs within their jurisdiction by a factor of 50% or, to a maximum of 2. In addition, municipal based ETSBs with a jurisdictional population of less than 25,000 must join with another ETSB to reach that minimum. County based ETSBs are excluded from the population requirement; however, they must meet the 50% reduction, or to 2 PSAPs, whichever is greater.

The reduction of PSAPs reduces the overall statewide cost of providing 9-1-1 services. Each ETSB mandated to reduce its number of PSAPs was required to submit a Consolidation Plan or request for waiver to the ISP by July 1st of 2016. Completion of the consolidation is required by July 1st, 2017.

Tazewell County currently has a single countywide ETSB and does not come under the requirement to join with another ETSB. The Tazewell County ETSB currently supports the operation of 4 PSAPs. The ETSB does come under the requirement to reduce the number of PSAPs by 50% to a maximum of 2.

The 9-1-1 legislation provides for exceptions. Tazewell County ETSB applied to the ISP for a waiver of the 50% reduction based upon the cost of consolidation. The application was considered; however, the exception was not granted. The Tazewell County ETSB is now required to submit a Consolidation Plan to the ISP by October 1st, 2017 and complete the reduction in the number of PSAPs by July 1st, 2019.

Operation of a 9-1-1 PSAP is not a simple process. Special telephone equipment is required to receive the 9-1-1 call and display the location of the caller. Radio control equipment is needed to communicate with the personnel responding to the emergency. Specialized computer software tracks unit arrival and status information. Equipment is needed to record voice messages and provide a standard time base. Sufficient personnel must be hired and trained to provide acceptable call answering and processing times. The work occurs on a 24-hour basis with varying levels of activity. The PSAP facility must have backup power and be hardened against human incursion and natural events.

Reducing the number of 9-1-1 PSAPs requires recalculation of personnel and equipment necessary under a new scenario of agencies and units dispatched. Communications systems must be extended to and controlled by the consolidated locations. The new consolidated PSAPs must meet the needs of the public and the agencies served to an equal, if not greater, level of service than that provided formerly by the multiple PSAPs.

In many cases, the consolidation process involves the expenditure of significant funds for facility and system changes. If done properly, consolidation can result in a long-term reduction or stabilization in personnel cost. The overall activity level of communications can be supported by fewer personnel otherwise staffed in multiple PSAPs.

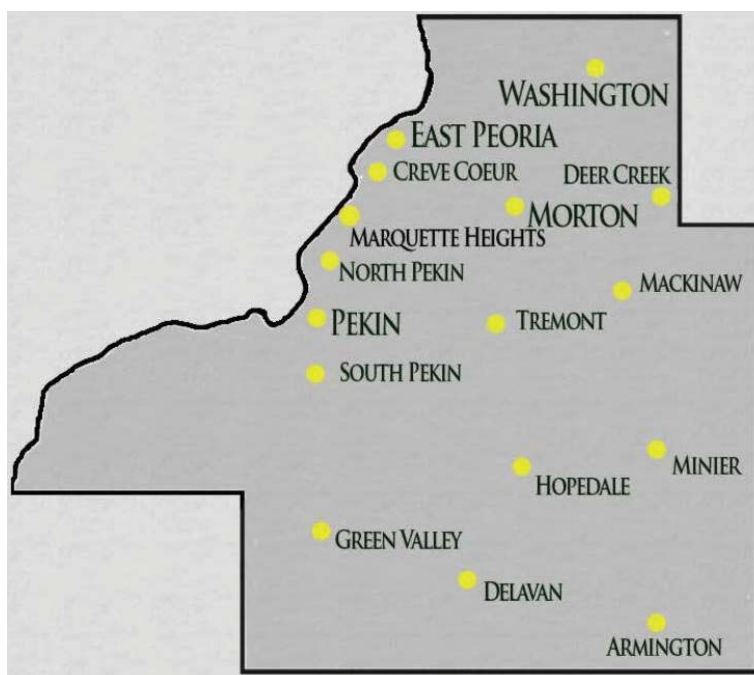
In recognition of the consolidation requirement and the effort required to compile a workable plan, the Tazewell County ETSB has retained the professional services of a Public Safety Consultant to formulate an acceptable plan, complete a report, and complete the Consolidation Plan to be filed with the Illinois State Police. This report contains a description of the factors required, decisions made and the projected costs to consolidate Tazewell County's 4 PSAPS to 2. The information contained herein is to be used in the filing of an official Consolidation Plan for Tazewell County.

CURRENT PSAP CONFIGURATION

Tazewell County is located in central Illinois with a population of approximately 136,000 residents. The County covers 658 square miles and is bordered by 6 counties. The Illinois River defines the western border of the county.



There are 16 centers of population in Tazewell County. The City of Peoria, population 116,000, is located across the Illinois River from the city of East Peoria and is connected by 2 major bridges and Interstate Highway 74. This proximity to a major population center contributes to significant public safety activity in East Peoria's business center.



Tazewell County Population Centers

2014 U.S. Census

Municipality/Community	Population	%	Acres	%
Pekin	33,800	24.9	14.6	2.2
East Peoria	23,375	17.2	39.9	6.1
Morton	16,267	12.0	13	2.0
Washington	15,816	11.7	8.2	1.2
Creve Coeur	5,367	4.0	4.6	.7
Marquette Heights	2,790	2.1	1.6	.2
Tremont	2,210	1.6	1.7	.3
Mackinaw	1,950	1.4	1.4	.2
Delavan	1,663	1.2	1.3	.2
North Pekin	1,596	1.2	1.7	.3
Minier	1,245	.9	1.1	.2
South Pekin	1,138	.8	1	.2
Hopedale	857	.6	.9	.1
Deer Creek	694	.5	1	.2
Green Valley	694	.5	.6	.1
Armington	340	.3	.5	.1
Remainder:	25,905	19.1	565	85.9
TOTAL:	135,707		658	

PSAP Distribution

The majority of public safety activity occurs in the northwest portion of Tazewell County. The Tazewell County ETSB currently supports 4 PSAPs. They are located in East Peoria, Morton, Pekin (PSAP name: Tazcom) and Washington. The PSAPs provide services for different Police (**P**), Fire (**F**) and Emergency Medical Services (**EMS** – also may be titled as ‘Rescue’) agencies. The following table shows agency dispatch distribution to the various PSAPs.

<i>PSAP Dispatch Client Agencies</i>		
PSAP	Police Agencies	Fire/EMS Agencies
East Peoria	East Peoria Creve Coeur Fondulac Park	East Peoria Creve Coeur Germantown Hills ^{1,2} Metamora ^{1,2} Northern Tazewell Spring Bay ^{1,2}
Morton	Morton	Morton Deer Creek
Washington	Washington	Washington Northern Tazewell
Tazcom/Pekin	Armington Deer Creek Delavan Green Valley Hopedale Mackinaw Marquette Heights Minier North Pekin Pekin Pekin Park District Tazewell Cty Sheriff South Pekin Tremont	AMT Ambulance Cinncinnati Delavan Green Valley Hopedale Mackinaw Marquette Heights Minier North Pekin Pekin Rescue 702 Schaefferville South Pekin Tremont

¹ Located in Woodford County with some jurisdiction in Tazewell County.

² Co-dispatched by Woodford County based on 9-1-1 call routing

East Peoria, Morton and Washington each operate the PSAP as a component of their respective police department. Tazcom is an independent joint venture between Tazewell County and the City of Pekin. The following table compares several key operational metrics.

Tazewell County PSAP Comparison

2016 Activities

PSAP	Sq. Ft.	Consoles	F/T Staff	P/T Staff	Yearly Expense	9-1-1 Calls	CAD Incidents
East Peoria	760	3	9		\$777,892 ¹	11,475	59,375
Morton	510	2	6	2	\$658,000 ¹	4,280	14,725
Tazcom	1,130	6	13	5	\$1,784,935 ²	21,006	105,494
Washington	320	2	6	7	\$683,830 ¹	3,387	13,406
TOTAL:	2720	13	34	14	\$3,904,657	40,148	193,000

¹ Estimated from personnel cost and proportioned departmental expenses.

² 2017 Budget

It should be noted that in the aggregate total shown for 9-1-1 calls in the table above, the numbers represent a yearly average of 4.6 calls to 9-1-1 per hour, 1 every 13 minutes. In addition to the budget total shown above representing PSAP operating expenses, the Tazewell County Emergency Telephone System Board also provides for operating expenses of PSAP technology including 9-1-1 telephone systems, radio dispatch consoles, a computer assisted dispatch (**CAD**) system and data network providing dispatch and records support, audio recording systems and the corresponding maintenance and support services. The 2016 yearly budget of the ETSB is \$1,316,871. Adding the PSAP expense total to the ETSB budget results in a net processing cost of \$130 per 9-1-1 call received. It should be noted that this amount includes the dispatch and management costs of all PSAP operations and not just answering the telephone.

PSAP Service Fees

Each of the 4 Tazewell County PSAPS support 9-1-1 dispatch of response agencies other than the host(s) of the PSAP. In many cases the client agency pays a fee for the call-taking and dispatch services. The following table lists agencies and their respective (2016-2017) fees.

Current PSAP Client Fees

Municipality/Agency	Fee
ADVANCED MEDICAL TRANSPORT	\$51,284
ARMINGTON (P)	\$1,706
CREVE COUER (P/F)	\$72,817
CINCINNATI FPD	\$6,762
DEER CREEK (P)	\$7,080
DELAVAN (P/F/R)	\$45,804
GREEN VALLEY (P/F)	\$12,654
HOPEDALE (P/F)	\$20,650
MACKINAW (P/F)	\$37,920
MARQUETTE HEIGHTS (P/F)	\$59,725
MINIER (P/F)	\$25,886
NORTH PEKIN (P/F)	\$30,061
PEKIN (P/F)	\$883,364
PEKIN PARK DISTRICT POLICE	\$18,349
SCHAEFFERVILLE FPD	\$2,964
SOUTH PEKIN (P/F)	\$22,980
TAZEWELL COUNTY (S/P/A)	\$481,538
TREMONT (P/F)	\$46,572
TREMONT RESCUE 702	\$13,134

PSAP Technology

The 4 PSAPs contain communications technology purchased and maintained by the Tazewell County ETSB. The ETSB staff assists each PSAP with configuration, operational problems and a “help desk” service when required. In addition to the PSAP based equipment, the ETSB maintains a data network connecting the PSAPs and certain other locations within the county.

Each PSAP has limited existing space for expansion of the dispatch center and equipment room. Tazcom has space to install 2 additional console workstation positions. East Peoria has a 4th position provisioned with furniture but there is no technology installed to support communications. Morton has room for 2 additional positions. Washington has a 3rd call-taker telephone and display on a counter but has no room for additional dispatch consoles.

TELEPHONE TECHNOLOGY

The telephone customer premise equipment (CPE) for processing the 9-1-1 call is based on the Zetron 3200 system which is reaching its practical end of life. Some components, such as telephone line cards, are no longer available new from the manufacturer. The CPE will not process Next Generation 9-1-1 calls in IP format. The equipment will require replacement prior to the target date of NG911 on July 1st, 2020.

Centurylink is the local area transport authority (LATA) providing the 9-1-1 service. Each 9-1-1 call arrives at the PSAP on a dedicated wireline circuit called a “trunk”. All Tazewell County 9-1-1 trunks originate from the same selective router located in Pekin. VOIP calls are routed on the wireless trunks. The following table illustrates the current distribution of 9-1-1 trunks in Tazewell County.

Tazewell County PSAP 9-1-1 Trunks

PSAP	Wireline	Wireless	Total
East Peoria	6	4	10
Morton	3	3	6
Tazcom	8	3	11
Washington	3	3	6
Total Trunks	20	13	33

While the number of circuits may appear to be low compared to the number of 9-1-1 calls received each year, the chance of having simultaneous calls is normally quite low. During major storms or a traffic accident on a heavily traveled highway, once the incident is recorded, follow-on callers showing the same location are asked if they are reporting a particular incident, thanked, and the next call is answered quickly.

RADIO CONTROL EQUIPMENT

The equipment used to control radio systems is similar in technology, age and condition to the telephone CPE based on the Zetron 4000 console system. The servicing vendor, Ragan Communications in Washington, has purchased spare parts to support continuing maintenance. However, it is likely that the manufacturer will discontinue support for the system in the near future. Practical life for the radio console control system technology is 3-5 years.

COMPUTER-ASSISTED DISPATCH SYSTEM

The computer-assisted dispatch system (CAD) purchased by the ETSB requires periodic hardware replacement and the ongoing purchase of a software maintenance subscription for continuing use. Unlike most “shrink wrapped” software, the CAD software is highly specialized and customized for 9-1-1 public safety operations and is upgraded on a regular basis. The number of software vendors supporting 9-1-1 systems is relatively small and typically maintain competitiveness through the purchase and integration of other similar software companies. The Tazewell County ETSB software vendor has been recently sold and is undergoing changes to accommodate new features. Future consideration may be given to changing software vendors to reduce operating costs.

Currently, the ETSB operates a single site server system for CAD operation. The servers are located at the Morton Police Department. Prudence dictates that backup server hardware be purchased and located at a secondary site, presumably, the Tazcom/Pekin location.

MICROWAVE NETWORK

The ETSB recently purchased and installed a microwave based data network backbone system to inter-connect the 4 PSAPs and several other agency sites. This system replaced many telephone company provided data circuits as well as a fiber-optic data transport backbone. The microwave network is likely to reach its return on investment in a few years. The fiber-optic system remains in place as a redundant alternative should problems occur in the microwave system; however, the fiber is not in use which saves operational cost.

Radio Systems

There are many different radio systems in use to provide 9-1-1 dispatch in Tazewell County. Traditionally, each police and fire agency provided for its own 2-way radio system, licensed by the Federal Communications Commission (FCC) on its own unique radio frequency. Ideally, the system provides reliable communications to the agency response unit equipped with a portable radio. The accepted measure of reliability for public safety is typically the ability to communicate within 95-97% of the response area.

2-way radio systems include transmitters and receivers. Transmitters and receivers only broadcast or receive radio signals on a specific licensed frequency. Base station transmitters are powerful radios with antennas located high above ground level on towers or tall buildings. The radio signal from a base station typically covers a wide area. The base station signal may be received by other base stations, mobile radios installed in vehicles, portable radios and pagers carried by response personnel. In addition, alerting receivers may be located in a home or at other indoor locations. In some instances, the base station may broadcast a signal to operate outdoor warning sirens.

The PSAP uses radio control console equipment to operate the base station transmitters and monitor inbound communications from other transmitters. The radio equipment may be located nearby or across the county. Many of the Tazewell County systems use the “repeater” method which triggers the base transmitter to “repeat” a message heard by one or more connected base station receivers. Using multiple receivers allows relatively weak signals from portable radios to be heard over the entire base station transmitter range.

The complexity and cost of the 2-way radio system is proportional to the amount of area covered. For most of the police and fire agencies, the coverage is municipal or township boundaries. Each radio system represents a significant investment in radio base stations, towers, antennas and the corresponding components. For most of the agencies in Tazewell County, the 2-way system consists of a single transmit and receive site. In the case of East Peoria, because of the terrain along the Illinois River, a second transmit site and several other receive sites are necessary. Pekin, the Tazewell County Sheriff and several smaller police agencies use a “trunked” radio system with several different frequencies and base station sites.

The traditional approach of limited coverage radio systems is problematic to the operation of a consolidated 9-1-1 center. Typically, dispatchers in the small agency PSAPs only use 1 police and 1 fire communications channel. The efficiency of consolidation comes from combining multiple agencies, each likely operating with only a small number of on-duty response units, on a single 2-way channel. Using that method, a dispatcher can control more than one agency’s units at the same time without needing to change channels.

While the aggregate number of units monitored increases, the telecommunicator is not required to listen to multiple radio channels and attempt to decide which channel to select for the particular unit message. While the response unit must listen to more radio messages than otherwise experienced on a single agency radio channel, the ability to communicate with the dispatcher is not impeded.

There is no accepted metric for the maximum number of units a dispatcher can control or how many units can share a single radio frequency. Given use of an efficient computer system and the migration of informational traffic off of the radio (officer uses a mobile computer for information), the practical number controlled can easily exceed 20 units. During busy periods, sometimes caused by enforcement initiatives which create high levels of activity, incident management can be shifted to a separate channel and handled by a separate console position.

Fire/EMS VHF Radio Communications

Tazewell County fire agency 2-way radio systems (excluding Pekin) are typically based in the Very High Frequency (VHF) band. Frequencies are measured in cycles per second or 'Hertz' (Hz). VHF transmissions are between 150-170 million hertz (MHz). In comparison, utility electrical current is 60 Hz and FM broadcast radio operates at 87-105 MHz. The VHF frequencies exhibit very good propagation characteristics over flat terrain. This is with antenna heights of 100-250 feet, provided the antenna site is high compared to the average terrain.

Tazewell County rural fire departments and districts typically employ volunteer or paid-on-call response personnel who are notified of the incident by VHF radio pager. The radio dispatch from the PSAP is preceded by tone signaling to alert the pager user and open the receiver for the audio message that follows. Firefighters and paramedics typically respond in vehicles equipped with a mobile radio which has significant power to communicate with a remote base station or receiver site. When the units arrive at the scene of a working incident, they may choose to change to a "fireground" frequency to limit communications to radios at the scene. While the Pekin Fire Department does not use a VHF system for dispatch, it continues to use VHF for paging off-duty personnel.

The VHF radio spectrum recently underwent a FCC mandated reduction in modulation (narrowbanding). This increased the number of available frequencies but resulted in a corresponding loss of signal coverage, typically between 15- 30%. It affected agencies attempting to cover large jurisdictions with a single radio site. Conversion of the analog radio signal to digital overcomes much of the coverage loss; however, it requires replacement of all VHF radios without digital capability. Tazewell County agencies would require a complete replacement of all VHF radio equipment currently in use should modulation change to digital.

The FCC narrowbanding mandate includes a second (future) reduction to double again the frequencies available. Because this second narrowbanding requires digital modulation (replacement of existing analog-only radios) and causes interference with older VHF radios, the mandate has been put on indefinite hold.

If and when the second narrowbanding requirement occurs, consideration should be given to a county-wide trunked radio system shared and used by all public safety agencies. While this would require fire agencies to purchase new equipment, the sharing would enable economies of scale replacing the old radio equipment.

Because VHF signals travel a great distance, care must be taken to use a frequency which is not shared with other agencies within a distance which would cause interference. However, there is not a problem sharing different frequencies or transmissions between agencies dispatched from the same PSAP, provided there is a mechanism in place for all users to listen. This “multicasting” method alerts users not to transmit while another user is broadcasting a message.

The best alternative for the consolidation process is to use one or more radio sites broadcasting on the *same frequency* in “simulcast” mode which promotes better overall coverage from overlapping signals. This is also a benefit as radio system users do not have to change radio channels when responding to a different jurisdiction. Having 2 channels available county-wide would accomplish a potential busy period split or disaster scenario as well as providing a backup channel in the event the other became unusable.

The move to the radio simulcast alternative requires a significant amount of engineering and expense. An interim solution links existing system transmitters and receivers at the PSAP and provides a multicast which reduces the need to monitor multiple systems. Costing is shown for an interim remote-control scheme and a later simulcast upgrade.

The following table lists the Tazewell County fire and EMS agencies with their respective base station frequency or trunked talk group. Currently, dispatchers selecting the particular agency for dispatch must change channels to accommodate radio traffic from a different agency. The interim goal for consolidation is to link systems together to reduce errors in primary channel selection.

Fire/EMS Agency Radio Channel/Group

Agency	Channel/Group	Agency	Channel/Group
Advanced Medical Transport	Peoria P25	Armington FPD	Logan County
Cincinnati FPD	154.2050	Creve Coeur FD	155.8650
Deer Creek FPD	154.8450	Delavan FPD	154.3400
East Peoria FD	151.4300	Forman FPD (154.3400)	Mason County
Germantown Hills FPD	154.3700	Green Valley FPD	154.3400
Hopedale FPD	154.2500	Mackinaw FPD	154.2500
Marquette Heights FD	154.9800	Metamora FPD	154.3700
Little Mackinaw FPD/Minier	154.2500	Morton FD	154.9950
North Pekin FD	154.2500	Northern Tazewell FPD	154.3700
Pekin FD (Dispatch)	EDACS PFD	Pekin FD (Paging)	154.2500
Schaefferville FPD	154.2050	South Pekin	154.2050
Spring Bay FPD	154.3700	Tremont FPD	154.2500
Washington FD	154.2050		

Police UHF Radio Communications

East Peoria, Creve Coeur, Fondulac Park District, Morton and Washington police use radio systems in the Ultra-High Frequency (**UHF**) range, between 460-470 MHz. UHF frequency characteristics are different than VHF. The signal wavelength decreases as the frequency increases. Wavelength is calculated upon the speed of light: 186,000 miles per second.

The VHF wavelength is approximately 6.5'. UHF is about 2'. The shorter wavelength of UHF allows better penetration through building materials and enclosed spaces. The UHF signal does not travel as far as VHF. This is not normally a problem as the police jurisdiction is typically smaller than a fire protection district. However, all radio signals above 100 MHz have problems with terrain as they do not penetrate soil or rock. Riverbanks and valleys are difficult terrain.

Each UHF system uses repeater base stations and covers the particular area of agency jurisdiction. Washington PD requires a second transmitter location to provide better coverage for portable radios. Police officers must switch channels to have their message heard from certain locations. East Peoria's primary system uses multiple receive locations to provide better coverage. A second repeater is in place for high risk incidents. East Peoria also employs a 3rd repeater system to enhance coverage at the junior college by relaying messages from the primary repeater.

A different UHF radio frequency is used for each system and police agency. Like the Fire VHF radio systems, the Police UHF systems were also required to narrowband or reduce modulation by January 1st of 2013. While this process reduced coverage, the difference was not as profound as experienced by the VHF systems. Like VHF, changing the UHF modulation to digital could improve coverage but requires complete replacement of all radios currently in use.

The interim approach to consolidation considers the same method to be used by the fire systems, installation of conversion devices at each of the PSAPs to communicate with the agency systems. This will allow 'patch' grouping of the agencies into a single position during low activity periods and splitting if activity levels dictate. Although the analog UHF equipment is still available in the radio market and, like VHF, not likely to obsolesce without the FCC mandate, consideration should be given to move all UHF agencies to a common 700/800 MHz radio system when other systems are replaced.

EDACS 800 Trunked Radio System

Because the Tazewell County Sheriff requires coverage county-wide, a different radio system approach was taken. In 1999, Tazewell County partnered with the City of Pekin to enhance a multi-channel trunked radio system with tower sites in different locations across the county. Ragan Communications, located in Washington, operated an Enhanced Digital Access Communication System (**EDACS**) trunked radio system developed by General Electric Corporation in the 1980s.

Channels were added for use by the Sheriff and Pekin. Under the agreement, users of the system pay Ragan Communications a fee per month for each radio on the system. Ragan maintains the EDACS infrastructure.

The EDACS uses 11 pairs of radio frequencies in the 800 MHz band with a wavelength of approximately 1 foot. The frequency range provides better penetration of buildings and structures and does not travel long distances compared to VHF or UHF. A downside of the wavelength is absorption by large moist plant leaves (within 4-5") the size of a radio antenna at 1/4 of the 800 MHz radio wavelength. This is particularly noticeable in the summer and autumn months. The use of 800 MHz is typically in urban environments where the foliage loss is not as critical as it would be for rural settings.

The EDACS provides radio service to the Sheriff, Probation, the City of Pekin Police, Fire and Public Works Departments and several other county based police agencies. It does so by use of multiple repeaters at several sites. The computer logic of the 'trunked' system defines the different users of the system into separate groups. When a group member activates a radio to transmit, the computer selects a frequency pair to repeat. All other group users receive the message.

The EDACS currently has 7 group assignments for public safety agencies. The Tazewell County Sheriff is assigned 2 groups and is generally dispatched with Court Services (Probation) and several other smaller police agencies dispatched by Tazcom. Pekin Police is assigned 3 groups and Pekin Fire Department 2 groups. There is also a talk group set up for all users in case interoperability is needed between agencies.

Trunked systems allow the configuration of more groups than frequencies. This works well given the premise that all groups will not need to transmit at the same time. This is a known and acceptable condition when messages are relatively short as typically seen in public safety and dispatch scenarios.

Another advantage of radio trunking is the ability to define different groups allowing PSAP dispatchers to combine agencies and units into a single group during periods of low activities, which makes more efficient use of the dispatch position. Trunking may be problematic during high activity periods such as storms or disasters when many different agency units converge on a scene and attempt to gain use of the system simultaneously. While some trunking systems provide for priority and preemption, the delay of the user waiting to transmit may occur. Trunked systems can typically be expanded with additional channels when growth occurs or additional agencies participate.

It should also be noted that the trunking process requires dedicated and expensive computer hardware and software to control the radios using the system. Each radio using the system must have a unique ID and be programmed for group access. Trunked radios are more expensive than conventional digital radios. The administration requirements for a trunked system are not trivial and add additional operating cost to system use.

Like the telephone CPE and console control systems procured by the ETSB, the EDACS is reaching its technological end-of-life and will no longer be supported by its manufacturer in the near future. Ragan Communications currently stocks sufficient spare parts for the system to operate or be expanded. However, the EDACS infrastructure should be replaced within 3-5 years.

The table below identifies the radio frequencies (in MHZ) or EDACS groups in use by the various police agencies.

<i>Police Agency Radio Channels/Goups</i>	
Police Agency	Frequency-Group
Armington PD	EDACS - TZ 1
Creve Coeur PD	460.0750
Deer Creek PD	EDACS - TZ 1
Delavan PD	EDACS - TZ 1
East Peoria PD 2 (Main)	460.0750
East Peoria PD 1 (Secondary)	460.4250
East Peoria (College Simulcast)	460.2250
Fondulac Park Police	460.0750
Green Valley PD	EDACS - TZ 1
HopeDale PD	EDACS - TZ 1
Mackinaw PD	EDACS - TZ 1
Marquette Heights PD	EDACS - PPD
Minier PD	EDACS - TZ 1
Morton PD	460.3000
North Pekin PD	EDACS - PPD
Pekin PD	EDACS - PPD
Pekin Park District Police	EDACS - PPD
South Pekin PD	EDACS - TZ 1
Tazewell County Sheriff	EDACS - TZ 1
Tremont PD	EDACS - TZ 1
Washington PD	460.1750

In addition to police and fire/EMS the Tazewell County PSAPS also support communications with other agencies. These include the public works departments for East Peoria, Morton and Washington and the Tazewell County Animal Control. These agencies are classified as public safety by the Federal Communications Commission.

<i>Other Radio Systems</i>	
Agency/Use	Frequency/Group
East Peoria Public Works	154.0250
Morton Public Works	154.9650
Washington Public Works	155.7450
Tazewell Co Animal Control	155.0700
Tazewell Co Court Services	EDACS TZ1
ISPERN	155.4750
IFERN	154.2650
Point-To-Point	155.3700

The *Other Radio Systems* listed are not used to the same extent as the fire and police radios, excepting the Tazewell County agencies. However, they are necessary to maintain inter-agency coordination in certain incidents. It should also be noted that Pekin Public Works uses the EDACS and has the capability to talk on the All-User group.

MAJOR CONSOLIDATION FACTORS

Under the mandate of the revised ETSA legislation Tazewell County must reduce the number of PSAPs by a factor of 50%. This represents the elimination of a minimum of 2 of the 4 operating PSAPs. The interpretation of the legislation by the Statewide 9-1-1 Administrator was stated at a meeting of Tazewell ETSB officials. Under the reduction of PSAPs the transfer of call-taking responsibilities only and relaying call information to its existing centers in a dispatch only process will not be permitted. Consolidation of the 9-1-1 services must include the integration of the call-taking and dispatch process at the PSAP. Tazewell County cannot simply shift the call taking to 2 PSAPs and continue operating a total of 4 dispatch centers.

Because of the mandate, a minimum of 2 of the current 4 PSAPs must be decommissioned. There are several factors which impact the choice of PSAP location. The major factors include location, available space/size and, because of the mandated time constraint, the time frame to make required changes must be within approximately 20 months. Secondary factors include cost and viability over time.

Location constraints deal primarily with flood and earthquake zones as well as exposure to expected hazards. East Peoria and Tazcom are close to the waters of the Illinois River. East Peoria is only 11 meters above the natural river surface. Tazcom sits on significantly higher ground, 45 meters above water level and is unlikely to flood.

Given that only the Tazcom PSAP has enough room within its dispatch center to install additional consoles; a second PSAP must be selected based primarily on the expansion requirement. Given the mandate of July 1st, 2019, location, design and construction of a new facility is not practical. Of the remaining 3 PSAPs, Morton has the best potential for additional expansion to accommodate the total number of positions required.

Preliminary architectural work, drawings and construction estimates have already been prepared for the Morton PSAP. The architect has estimated an additional 3-5 months of engineering design and 9-12 months for construction will be required. This puts completion of the PSAP prior to the July 1st 2019 mandate.

It should be noted that there is an initiative to expand Illinois Community College in Washington to include a fire training center. Potential space would be available to site and construct a PSAP during the process. This project however is only in the concept stage. There is no preliminary design or source of identified funding. Given the current process of State of Illinois approval and funding, it is highly unlikely that the project would be complete by the required date.

Backup Location

The Pekin/Tazcom PSAP is currently large enough to serve as a single site PSAP for 9-1-1 call taking and dispatch of all the Tazewell County response agencies. However, it is a legal requirement that there be another active PSAP designated to receive overflow calls which would otherwise receive a busy signal. The backup PSAP receives *all calls* should the original center be unavailable. Currently, the East Peoria PSAP serves as a mutual backup to Pekin/Tazcom. The Morton PSAP plays the same role with the Washington PSAP.

If Tazewell County consolidated into a single PSAP and was forced to shut down, the 9-1-1 calls would re-route to another location, out of the county. However, would the backup location also have the ability to maintain 2-way radio communications for Tazewell County agency dispatch? The facility would require 1.) a minimum number of open radio dispatch positions to service the particular Tazewell County agencies and 2.) a capability to operate all of the Tazewell County agency's 2-way radio systems. Currently, there are no nearby adjacent county PSAPs with this capability. Furthermore, Tazewell County would shoulder the cost to provide and maintain such equipment. It is likely that the equipment in the backup PSAP would have little operational use.

Some jurisdictions have accommodated this requirement with a 'dark' location or mobile command unit which can be quickly converted for use as a communications center. While this approach has merit to reduce overall cost to accommodate disaster scenarios, it has several drawbacks. A dark communications center requires periodic testing and maintenance to ensure that all systems operate when required. The location or vehicle cannot receive the 9-1-1 calls as it is not an approved (active) PSAP. This requires the designated backup center to relay information from the 9-1-1 call causing delay and potential error.

For Tazewell County, the agreed upon best alternative is to have a second, fully functioning PSAP to provide redundancy. This PSAP would essentially 'mirror' the Pekin/Tazcom PSAP technology and communications capability. The 2 PSAPs would support overall operations in an 'Active-Active' mode and role.

Operationally, under a single governance organization, each PSAP can be staffed in accordance with the flexibility required by changing activity requirements. In addition, having 2 PSAPs equally capable provides ample communications resource for periods of extremely high communications activity. At this time, only one location, Morton, is practically suitable for the 2nd PSAP role.

Facility Construction Standards

There are many standards which apply to the construction and operation of a 9-1-1 facility. The Illinois State Police Office of the 9-1-1 Administrator now enforces the previous ICC requirements for PSAPs including security, backup power and recording systems. The most notable is the National Fire Protection Association (NFPA) 1221: ***Standards for the Installation, Maintenance, and. Use of Emergency Services Communications Systems***. This document provides a detailed outline for facility construction, hardening of exterior and interior walls, windows and doors, provision of backup power, placement of rest and break rooms adjacent to the communications center and a number of technology systems with operational features and functions. Currently, each of the 4 Tazewell County PSAPs appear compliant with a majority of the published standards and do not appear to have any major deficiencies. Some particular items requiring improvement are addressed in this report and others may be addressed in the next 3-5 years.

Under the proposed consolidation, the Tazewell County ETSB is concerned with and committed to providing a redundant 9-1-1 environment. This is to be accomplished by providing 2 independent facilities. The economic benefit of consolidation is the reduction in overall staffing and maintenance of duplicate facilities (from 4 to 2). This efficiency requires changes to radio communications systems allowing agencies to share communications channels.

This section discusses several key factors of consolidation. It does so from the standpoint of the size, technology and staffing factors of a single PSAP operation even though there will be 2 PSAPs. Each PSAP shares the same information system as if the operation was actually in one location. In operation, the future consolidated organization determines the particular method of staff deployment to the 2 PSAP locations which will operate using an active-active method.

Growth

Besides compliance with facility and technology based standards discussed above, the consolidated PSAP is sized to contain a sufficient number of console work positions to distribute activity load during busy periods. The facility planned life span should be no less than 15 years. Analysis of CAD Calls For Service (**CFS**) activity statistics from 2014 through 2016 indicates a growth trend of approximately 2.75% per year. Using a consistent linear growth pattern, the aggregate CFS activity load through the lifetime of the Tazewell County PSAP grows to reach approximately 145,000/year at end of design life. This number equates to an average of 16.6 incidents per hour.

Console Position Requirements

Each PSAP telecommunicator position can handle a certain amount of workload. As workload approaches 40 minutes per hour, fatigue becomes a major factor. Fatigue can cause errors. If 9-1-1 calls and incidents occurred with an equal period of time in-between (based on the yearly average), using a uniform handling time of 45 seconds per call and 1.5 minutes of dispatch interaction time per incident, a single Tazewell County dispatch position would be active for only 32 minutes per hour. However, that scenario is a mathematical exercise and not reality.

PSAP activities are not simply a compilation of yearly totals times an average time per call or incident. Each call and incident is different in nature, time and resource. While statistics can indicate when busy and lull periods routinely occur, demographics and nature provide individual occurrences creating activity and workload far beyond the average.

However, just as a PSAP cannot be designed for the average hour, it cannot be made so large and routinely staffed to accommodate a major disaster. Unpredictable occurrences require systems and personnel to move the level of performance well above normal busy conditions. With the implementation of 2 fully equipped, comparative sized PSAPs, Tazewell County will have significant available positions to meet unusual periods of activity.

Good PSAP design requires the number of console positions to handle the amount of activity during anticipated regular busy periods. The statistical number derived from the day of week and hour of day distribution may not reflect a practical count. This occurs because of several operational factors.

First, a dispatcher should be responsible for communications with only one type of agency, police or fire/EMS. Because the nature of police activities differs from fire/EMS, the method of unit selection and notification is different. Particularly, in Tazewell County, police and fire/EMS are on different frequency bands, requiring the dispatcher to listen to and select the proper channel for the particular agency and type of communications. Also, the computer system to record incident information handles incident types differently. Given that Tazewell County PSAPS supports police and fire/EMS, console and staffing moves from the theoretical 1 to 2 positions.

Second, during certain predictable busy periods, the aggregate amount of radio traffic from all police agencies may exceed the desired maximum capacity (66% usage/hour) of a single radio channel. Based on their statistics, East Peoria and Pekin Police may qualify for a separate staffed position during significantly busy periods raising minimum console count to 4.

The number of console positions is affected by the ability of radio systems to join agencies at a particular dispatch console and separate them in a particular re-configuration. This is a consideration if Tazewell County radio systems are not upgraded in the proximate future, particularly the agencies using the EDACS. Given the separation of both police and fire EDACS agencies, the busy period minimum console count rises to 6.

This count does not include a factor for growth. Given the yearly activity statistics from the prior 3 years, a factor of .41 is required adding 2 additional positions, bringing the total console count to 8. This provides for current operation with spares for breakdown, training or major incidents. While this number may be relieved somewhat should the county implement a suitable radio infrastructure with all-agency access and coverage, the prudence of providing for growth is well borne.

Telecommunicator Staffing

Of particular note in the consolidation process is the relationship of capital improvement cost to operational expense. The console count discussed above is a one-time expenditure accompanied by a minimal ongoing maintenance expense. The most significant PSAP operational expense is personnel. Using an 8-hour shift work period and standard leave-time benefits requires a minimum of 5.2 staff for one (1) 24-hour position.

The level of telecommunicator staffing at an efficient consolidated center should be less than the aggregate personnel count of the PSAPs being consolidated. This occurs because smaller PSAPs rarely reach a threshold of activity requiring more than a single console position. Because of the nature of fire and police dispatch, a minimum of 2 positions must be staffed. It is also a requirement of the Illinois Department of Public Health that 2 persons be available when pre-arrival emergency medical instructions (EMD) are being provided. In many smaller PSAPs, during midnight and early morning periods there is little, if any, 9-1-1 activity.

The on-duty requirement for staffing changes based upon activity levels. As discussed in *CONSOLE POSITION REQUIREMENTS*, until radio system improvements allow greater flexibility in grouping agencies at a particular console, some benefits of consolidation are reduced for Tazewell County. Given current activities at the 4 PSAPs, a minimum staffing scenario using available radio groups indicate a minimum of 5 positions are required. This number might be reduced to a minimum of 4 given during lull periods subsequent to radio system improvement. During extremely busy periods additional segmentation of the East Peoria and Pekin police would raise the console staffing to a total of 6 with the possible addition of a call taker who could be dedicated to managing a potential major incident during the busy period.

A 5-position minimum staffing with potential busy period shifts adding an additional 1-2 telecommunicators (by schedule) will require a total of 29 authorized positions given expected leave time benefits and experienced periodic turnover. The number also recognizes the commonplace difficulty of maintaining authorized levels. This is an 11 person or 25% reduction in the current PSAP personnel count given equivalency of 50% (20 hours per week) for the agencies augmenting their full-time staff with part-time.

CONSOLIDATED CONFIGURATION

The following sections detail the process and changes required for the consolidation. It is composed of 4 parts. The first 3 explain immediate initiatives to modify the current PSAPs for transition. The 4th outlines a more expensive initial option which eliminates the requirements otherwise shown in the first 2. It should be noted that the mandate for consolidation does not include state financial support. The direction given for implementation planning stressed the importance of determining least-cost alternatives as shown in the first 3 parts.

Radio Systems Control Upgrade

Short term consolidation planning indicates that the current 2-way radio systems in use at the 4 centers can be operated by existing console control systems in other PSAPs. The efficiency of consolidation is leveraged by the ability to combine agencies onto a single communications channel during periods of activity which do not saturate the channel. The method to accomplish control consists of the installation of network based conversion devices to allow the appearance of wireline signals at the PSAP sites to be decommissioned. The existing ETSB microwave IP network will be used as a relatively simple and inexpensive method of connection. Both Morton and Pekin require upgrades to provide all-channel operating capability.

The mechanism to join radio systems consists of a console 'patch' or cross connection of the systems during low-mid activity periods. This allows a reduction in the total number of operating personnel assigned to dispatch through simplification of the radio process. This does however present a change to operational units who then hear messages from the other agencies. In some cases, this is a positive change when agencies have incidents which cross jurisdictional borders or involve automatic mutual aid. In some cases, officers currently have scanning radios to listen to other agencies.

The second radio system upgrade required for consolidation is the movement of radio equipment in Morton. The site currently housing the radio equipment was the downtown based former Morton Police and Fire Department building and tower. The property was sold and the radio site must be abandoned in 2018. The radio equipment is currently connected to the Morton PSAP using expensive telephone line wire circuits and does not provide all of the necessary radio coverage for the Police Department.

There are 3 different approaches to consider, move or replace existing equipment, convert Morton Police to the EDACS or consider a new 2-way radio system. All require the selection of a suitable site, preferably with an existing tower to locate antennas and transmission equipment. The Morton Police Department location currently has a nearby water tower and cellular monopole, within a distance suitable for trenching and/or underground boring to connect communications circuits.

The first option consists of a simple movement or replacement of existing equipment. The move option is problematic as the equipment services the primary communications channels for the Morton Police and Fire Departments. It can be done with preparation to provide for alternative radio channels while the equipment is in transit between the 2 sites. A second alternative is to purchase new or acceptable used base station equipment and keep the old equipment as spares. This does not apply to the EDACS base station equipment because Morton only uses that periodically. It can be moved without significant impact.

Given that the purchase of replacement equipment is required for continuity, a second approach is expansion of the EDACS with a site in Morton. This option achieves the goal of continuous operation as cutover would consist of a single change over to new radios. This is at significantly greater cost than replacing repeater base stations which, given other near-term radio system changes, could be other than new. The limiting factor in this approach is the EDACS has a relatively short usable lifespan so the cost of the improvement would not be a long-term investment.

A longer-term approach indicates the best alternative for Tazewell County is to provide a multi-channel or group based radio system to replace equipment in use today. The EDACS should otherwise be replaced in the 2019-2020 timeframe. To make the replacement as simple as possible, the process includes a design and procurement of new equipment which allows the current systems to be used through the change-over period.

The Computer Assisted Pre-coordination Resource and Database (CAPRAD) system indicates that Tazewell County has been assigned a total of 30 700 MHz radio channels for future use. The FCC has indicated that the overall block of frequencies has been set aside for public safety use. The 700 MHz are suitable for wide (county) area coverage when implemented with multiple transmit sites. Obtaining 700 MHz frequencies would allow the continued use of the EDACS while the new system is commissioned.

Current rules allow for up to 3 channels assigned for conventional use. Assignment of over 3 channels requires a trunked configuration. Trunking is significantly more expensive and is not needed for Police operations. This option may be examined later for possible future implementation.

The current fire department radio dispatch systems are not technologically obsolete. However, changes should be undertaken to make unified channel operation available on a countywide basis similar to law enforcement. This decreases error potential and simplifies fire/EMS dispatch. Initial changes link fire systems through a console patch for simpler control. This reduces the requirement to listen to multiple radio channels. Future upgrade includes the installation of simulcasting equipment to provide countywide operation on a single channel. A second channel is installed for backup or use during a major incident.

In a similar manner to combined police agencies, fire units will be effectively sharing radio frequencies and will hear all dispatch messages. Unlike police agencies, fire dispatches are preceded by a tone code for the particular agency. Simple and inexpensive radio equipment allows fire receivers to remain quiet unless a specific tone code is broadcast. This allows silence for the agencies not being dispatched during nighttime sleep periods.

9-1-1 Telephone Systems Upgrade

Changing from 4 PSAPs into 2 is not a complicated process for 9-1-1 line trunking. The number of Tazewell County 9-1-1 telephone trunks in use was last revised by Centurylink in 2009. Calculations are made to provide a P.01 grade of service which means when a call is placed during a busy period, 99% of the time, there will be an open line available. If all 9-1-1 lines are busy, the caller is automatically sent to the designated backup PSAP. In operation, this condition rarely happens. Furthermore, the calculation to determine the line count has become less accurate due to the rise of cellular phone use and the decline of wireline based home telephones. In Tazewell County, 9-1-1 calls are predominantly coming from wireless circuits. NG911 uses network based call delivery and will not require trunks or trunk based routing.

The significant increase in wireless and VoIP calls being placed to 9-1-1 has caused a rethinking of the need for separate 9-1-1 trunk circuits for wireless and wireline. Centurylink has indicated that their network can accommodate wireless and wireline calls over the same 9-1-1 trunks. ISP's 9-1-1 Administrator's office related that there is no prohibition in Illinois regarding combining of the trunks, and in fact ISP encourages it as PSAPs are being consolidated.

Considering the consolidation process will result in 2 PSAPs with equal capability and, for the immediate future (until NG911 is provisioned), it is recommended that number of 9-1-1 trunks at Pekin/Tazcom be increased by one to a total of 12. This also requires the Morton PSAP 9-1-1 counts be increased to match Pekin/Tazcom. While console and audio recording equipment must be increased for the additional trunking and radio channels, Centurylink costs for installation and operation of the additional 9-1-1 circuits will be paid for by the State of Illinois.

2-PSAP Tazewell County PSAP 9-1-1 Trunking

PSAP	Current	Proposed
Morton (North)	6	12
Pekin (South)	11	12

In the 2-PSAP scenario, the Morton trunks would be assigned the northern portion of Tazewell County including Creve Coeur, East Peoria, Morton and Washington. The Pekin trunks would cover the City of Pekin and areas south not covered by Morton. Overflow calls would pass to the other center. In the event of a PSAP shut-down, all county calls would go to the remaining PSAP.

Distributing the 9-1-1 trunking in this manner does not limit or hinder the ability of the new organization assigning radio dispatch for any particular agency, or combination thereof, at a console position at either center. The CAD system serves all positions simultaneously. It automatically routes notification of the incident to the console position responsible for the agency units. All radio systems are available at either center. Answering the 9-1-1 call at one PSAP and dispatching at the other can be done without delay. Pricing is included for a networked based closed-circuit television monitor at each center to allow observation of activity conditions. It gives the ability to 'shout-out' an important call if it is going to be dispatched at the other center. Also, a ring-down telephone circuit is provided so that a console position may converse with the other PSAP by pressing a single key.

In addition to handling 9-1-1 calls, it is prudent for the PSAPs to answer agency non-emergency 7-digit telephone lines currently published in telephone directories. In many cases, the public will dial these numbers to report incidents which may require an agency response believing that the call is not of an emergency nature. Many of the PSAPs currently provided call answering for supported agencies during non-business hours. The current 3 police department PSAPs act as administrative call attendants for their particular agencies. While there are several different communications routing alternatives, the recommended mechanism is to provide for direct system access for the major agencies and forwarded access for the agencies currently using that method.

PSAP Facilities Upgrade

The Pekin/Tazcom PSAP facility currently has space to install 2 addition positions of console furniture and technology to increase console positions to a total of 8. The process includes the purchase and installation of specialized radio console furniture, computer workstations and display screens, mounting/racking hardware and corresponding radio and telephone control panels. In addition, some facility modifications should be made to improve entry security and traffic flow. A budget for facility changes is shown in *Conversion Costs*; however, no owner's approval or architectural planning has of yet taken place.

The Morton PSAP currently has only 2 console positions and requires an upgrade to 8. The facility itself must be expanded through demolition and re-construction. Architectural drawings have been prepared and the process will move to engineering and construction drawings when approved. The total construction process is predicted by the architect to take between 9-15 months starting from approval.

In addition to the 9-1-1 telephone and radio console system changes, the positions require the installation of a CAD workstation. In some cases, the existing equipment can be moved in a similar manner to that proposed for the phone and radio technology. However, there will be equipment required to increase Morton to the full 8 positions. The cost of 2 new CAD workstations is shown in Morton's supplemental costs.

The East Peoria, Morton and Washington Police Departments require the addition of an emergency 9-1-1 telephone in the outer lobby entryway prior to consolidation. These devices are further detailed in the consolidation costing.

Radio/Telephone Control System Replacement

The current radio console control systems require replacement in the near to mid-term (3-5 year period) due to obsolescence. The new systems should be based upon Internet Protocol to conform to future digital radio system control requirements. New radio systems operating using digital modulation can be controlled through the IP network without the requirement of console interface devices given a compatible IP based console controller. However, the current consoles can be used for an interim period with limited modification for the consolidation. This is recommended until both PSAPs are fully operational.

Certain new radio control console systems provide dual functionality of both radio control and 9-1-1 telephone system switching. Waiting until the Illinois State Police determines the provider and method of NG911 is a prudent option for console replacement given that the state may endorse a particular vendor or vendors who provide combined control systems. For purposes of this consolidation report, the expense of a potential upgrade is included as well as a 3rd year initiative for replacement with a conventional alternative.

Budgets

To implement the mandate of the revised statute, Tazewell County will consolidate 4 PSAPs into 2. This is accomplished by organizing a new consolidated body through an intergovernmental agreement; hiring staff; procuring or moving necessary technology; upgrading facilities at Morton and Pekin; and cut-over of communications circuits as necessary to enable transfer of 9-1-1 calls and radio control to the 2 remaining locations.

It is recognized that this is an unfunded mandate in accordance with compliance to the new legislation. While there is the possibility of obtaining grant funds set aside for consolidation, it is the current practice to award those funds only after the applied for project has been completed and otherwise paid for. Unless there are other grant funds available, capital projects will require contributions from the member agencies or, where the improvement is particular to a specific agency or group, apportioned among the agencies that benefit.

Conversion Costs

Under the following estimate of capital costs, it is assumed that each PSAP will be capable of and configured for supporting call-taking and dispatch for all participating agencies. It includes system hardware and mechanisms for telephone, 2-way radio control, radio paging and control of Outdoor Warning Siren systems, audio recording and computers.

The replacement of radio console furniture is not required or desired until the 9-1-1 telephone system is replaced. The current console equipment is based on an equipment rack configuration for push-button line appearances. Placing that equipment onto the newer style furniture requires purchasing additional desktop racks. New telephone CPE use computer generated screens and button icons.

Newer 9-1-1 PSAP console furniture has evolved, allowing tabletop, keyboard and monitor movement in a vertical plane. This allows the telecommunicator to work in a sitting or standing position. The adjustment also allows for wheelchair configurations. Only the East Peoria PSAP currently has this type of furniture.

Under the cutover plan proposed, 4 relatively new adjustable furniture console positions are to be decommissioned with the East Peoria PSAP on final consolidation. The furniture is in good working condition and is otherwise of little salvage value in the general market. It is suggested that it be moved to Morton, replacing the older existing furniture saving the cost of 4 new positions. The projected transfer cost is included in the installation budget estimate. Besides the console furniture, there are several more items of significant cost required to occupy the consoles. This includes dispatcher chairs, task lighting, heating panels and other accouterments such as desk

Also included in the telephone equipment upgrade is the placement of 9-1-1 phones in the lobbies of the East Peoria, Morton and Washington Police Departments. While these phones may be considered a 'legacy' requirement given the almost universal use of cellular phones, there may be an occasion where a citizen enters the police department after business hours to report an emergency believing that a person is present. The phone, typically red in color, is on the lobby wall with signage to indicate the phone is directly connected to a PSAP.

FACILITY CONSTRUCTION IMPROVEMENTS – MORTON

While the Morton construction expansion is defined, additional work is necessary beyond the original planning. Because the south side of the PSAP wall is exposed to Birchwood Street, all glazing (5 windows) requires bullet resistant glazing. The existing lobby windows, even though they are of bullet resistant materials, should be removed and replaced with masonry to match the existing wall. It is the intent of several of the standards to remove public interaction, possible threats and distraction as much as possible from 9-1-1 operations.

The dispatch center walls may require acoustical panels to dampen reflected noise during busy periods. Flooring material must be of anti-static composite. Lighting must be indirect, suitable for use and placed not to cause reflection on the computer screens.

Although the Morton plan calls for electrical modifications, the facility requires a master battery backed uninterruptible power system (UPS), related switching equipment and an outside electrical connection port. The port allows the connection of a portable generator to power the PSAP should the building's generator fail. Currently, a number of individual UPS devices are used to support particular components of system equipment. While the devices will prevent equipment failure should the utility electricity drop, they do not comply with standards for battery endurance.

It is assumed that improvements which become part of the facility itself will be funded by the Village of Morton as they increase the capital value of the property and the space will accrue rent from the PSAP organization. The addition of the UPS, although it is connected to building electrical panels, is an addition of a backup system otherwise required by 9-1-1 standards. The UPS is not necessarily part of the expansion construction or increased valuation of the property. While the construction allocation of the PSAP is currently estimated at \$441,000 by the designing architect, only the addition of the UPS and its required switchgear and external port is shown as a consolidation expense.

It should be noted that Morton's supplemental expenses include the cost of the addition of 2 console positions over and above those provided by East Peoria. These new positions include 9-1-1 telephone, radio controls, CAD and furniture which will be in place for a short period until the implementation of NG911 and new console furniture. Money may be conserved by waiting to implement those positions. While the backup capabilities may be reduced somewhat for that time period, the total count of 8 positions is based upon expected growth and only becomes critical should a major disaster occur.

FACILITY CONSTRUCTION IMPROVEMENTS – PEKIN

The Tazcom PSAP in Pekin also requires some modifications for security and suitability. The entry door on the north-west end of the building leads directly into the communications center. It is given weather protection with a glass enclosed atrium using aluminum architectural framing and glass doors. Because of the proximity to Koch St., there is little protection from vehicular incursion and the entryway is open to the public. This should be replaced with a brick or other hardened material and given a steel entry door which is handicapped accessible. The door will require access control hardware.

Consideration should be given to placement of a reinforced concrete bollard or hardening the outer corner of the entryway to resist a vehicular collision. The estimated cost includes excavation and concrete work for placement of footings.

While there is raised floor space available for console placement, certain items of furniture and cabinetry must be displaced. There is space to the south which is currently used as an entryway. Consideration should be given to moving the access door to the hallway and repositioning the transition ramp to the east side of the space. This would allow for additional console placement room. Additionally, the walls of the center may benefit from the placement of acoustical panels to dampen ambient noise during busy periods.

Consideration should also be given to use of the facility's east entry door as the public access entryway. There appears to be office space suitable for use should the organization decide to place administrative staff at that location. The cost of conversion appears to involve security accommodation and furniture only. Because the space is currently occupied by other Pekin governmental components, negotiations are required along with the possibility of increased rental costs.

9-1-1 TELEPHONE SYSTEM AND RADIO CONTROL

The consolidation process includes the reconfiguration of 9-1-1 telephone equipment and radio control consoles to provide access to all of the agency radio systems at each of the 2 PSAPs. In addition, there is the need to provide communications from the PSAPs to remote base stations. In some cases, this uses the ETSB's microwave network and in others using radios.

There are 2 methods to provide this equipment. Purchase replacement equipment or use the existing equipment as much as possible. The direction of the ETSB is that the process be completed in the most reasonable and economical manner possible. To accomplish this, a method was conceived to stage the re-allocation of 9-1-1 call routing assignments and the decommissioning of different PSAPs at intervals to allow movement and re-use of existing equipment. This keeps the purchase of replacement equipment to a minimum.

However, it should be noted that some systems, notably the 9-1-1 telephone system will need replacement in the 2019-2020 timeframe to accommodate NG9-1-1. Concurrent with the system replacement, new console furniture is required. These projects are shown later in this document as *Major Initiatives*. The exact method of NG911 provision in Illinois is not known at this time. There is only a minor cost to move the existing 9-1-1 telephone equipment. It is prudent to wait to replace the entire 9-1-1 telephone system at this time.

MORTON RADIO FACILITIES

The costs shown below assume that the Morton PSAP will have moved the current radio facilities from the old downtown fire department to the police department PSAP site. In addition, the new site will have both wireline and fiber connection to the PSAP. There is currently a water tower and a cellular monopole located nearby the police department. Both may be suitable to place antennas; however, at this time, neither option has been evaluated nor the necessary permissions to use either location gained.

A price for a new radio tower, installation, enclosure, fencing, security and connection to the PSAP with an underground conduit is included as an informational line item. While the provision of this tower could be considered a radio infrastructure project and could be used for future joint projects including expansion of the microwave system or a county-wide radio system, it is not necessarily an expense attributable to consolidation.

<i>PSAP Consolidation Conversion Costs</i>	
Project Description	Cost
Morton UPS & Electrical Installation	\$34,700
Morton Telephone and Radio Upgrades	\$123,871
Morton Supplemental Expense	\$16,200
Pekin Telephone and Radio Upgrades	\$89,407
Pekin Supplemental Expense	\$1,700
Total:	\$265,878
Morton Tower Site Replacement	246,500
Morton Facility Construction	465,910
Pekin Facility Modifications	27,415

The Tazewell County ETSB has agreed to pay for the \$265,878 in conversion costs for the consolidation. It is assumed that the facility construction and modification costs will be paid for by the facility owners. Much of those costs will be offset by rental payments.

Operational Costs

The following estimate of PSAP costs assumes several different premises regarding operational constructs. The number of personnel to operate call-taking and dispatch positions changes to match different periods of predictable workload. Dispatchers may be assigned to control one or several agencies depending on activity level; however, control will be limited to a single agency type, i.e.: police or fire. Agencies may share radio channels with other agencies depending on activity levels.

Operational costing includes an administrative management, human resource and supervisory structure, training and quality assurance component, maintenance of operational systems, infrastructure and facilities. In addition, costs include maintenance of infrastructure telephone and data transport as well as the answering of legacy 7-digit published agency non-emergency numbers on a secondary basis. Costs do not include maintenance of agency radio subscriber units, data access devices or other agency based non-infrastructure devices. It is possible to reduce communications costs such as telephone line costs in the future through consolidation of radio systems.

The table on the following page is based on a fiscal year as defined in the TC³ Governance Agreement starting on May 1st and ending on April 30th. Under the proposed implementation schedule the hiring/lateral transfer of Telecommunications personnel is on 04/30/2018. This gives budget considerations for other agencies and the T/P CCC on a May 1st budget period a clean slate for communications personnel in the upcoming fiscal year. It should be noted that East Peoria, Morton and Washington will need to show costs for offset records personnel starting on the proposed dates shown for PSAP cutover.

TC³ 5-YEAR OPERATIONAL BUDGET

Line Item	F/Y 2017	F/Y 2018	F/Y 2019	F/Y 2020	F/Y 2021
Administrative Personnel	\$74,587	\$364,070	\$372,422	\$379,871	\$387,468
Telecommunicators		\$1,415,000	\$1,443,300	\$1,472,166	\$1,501,609
Holiday Pay		\$193,836	\$197,712	\$201,667	\$205,700
Overtime Pay		\$70,750	\$72,165	\$73,608	\$75,080
Pay Incentives		\$127,350	\$129,897	\$132,495	\$135,145
Group Medical Insurance		\$405,000	\$409,050	\$413,141	\$417,272
IMRF	\$5,221	\$124,535	\$127,101	\$129,643	\$132,235
Payroll Taxes		\$53,190	\$54,280	\$55,365	\$56,473
Training/Certification Expense		\$10,000	\$10,000	\$10,000	\$10,000
Liability Insurance	\$1,500	\$15,000	\$16,530	\$18,216	\$20,074
Unemployment Insurance	\$746	\$17,791	\$18,157	\$18,520	\$18,891
Workers Comp Insurance	\$895	\$21,349	\$21,789	\$22,224	\$22,669
CAD Software Maintenance		\$175,000	\$178,500	\$182,070	\$185,711
Computer Hardware-Software	\$7,500	\$7,500	\$7,500	\$7,500	\$7,500
EDACS Port Fees		\$1,600	\$1,600	\$1,600	
Equipment Lease Payments		\$2,200	\$2,200	\$2,200	\$2,200
Facility Rent		\$29,000	\$29,000	\$29,000	\$29,000
Generator Fuel		\$1,500	\$1,500	\$1,500	\$1,500
LEADS Interface		\$16,025	\$16,025	\$16,025	\$16,025
Office/Operational Supplies	\$1,500	\$5,000	\$5,000	\$5,000	\$5,000
Repair/Replacement Costs		\$7,500	\$7,500	\$7,500	\$7,500
Telephone Circuit Expense		\$57,500	\$57,500	\$57,500	\$28,750
Dues & Publications		\$4,350	\$4,350	\$4,350	\$4,350
Education/Conference Expense		\$7,000	\$7,000	\$7,000	\$7,000
Transport, Lodging and Mileage		\$15,000	\$15,000	\$15,000	\$15,000
Support Vehicles Expense	\$1,650	\$9,900	\$9,900	\$9,900	\$9,900
Support Vehilces Mileage	\$1,690	\$12,150	\$1,250	\$1,250	\$1,250
Accounting/Payroll Services	\$1,500	\$7,500	\$7,650	\$7,803	\$7,959
Banking Fees & Expense	\$500	\$300	\$300	\$300	\$300
Facility Cleaning & Maintenance		\$4,800	\$4,896	\$4,994	\$5,094
Hiring Testing/Evaluation		\$500	\$1,000	\$1,000	\$1,000
Legal Services	\$3,500	\$7,500	\$1,500	\$1,500	\$1,500
Employee Benefits		\$3,600	\$3,600	\$3,600	\$3,600
Public Relations		\$750	\$750	\$750	\$750
Total:	\$100,789	\$3,194,045	\$3,235,924	\$3,294,258	\$3,323,506

It should be noted that the organizational budget shown differs in approach from current PSAP operations. It is proposed that the consolidated organization takes over a certain amount of support currently provided by the Tazewell County ETSB. The services include computer system maintenance and management as well as providing a training and quality assurance component. Because the serviced organizations change from 4 into 1, it is no longer an advantage to have an independent service component. Furthermore, the ETSB may be a far simpler mechanism to host the upcoming major technology improvements

Major Initiative Cost

The above costs recognize the ability to consolidate 4 PSAPs into 2 and presumably operate for a 3-year period. The projected cost assumes technology systems in place do not require major repairs from failures or destructive natural forces. Certain technology requires replacement regardless of uninterrupted use. This is due principally to new innovations which cause manufacturers to introduce new model lines then discontinue production of replacement parts for older systems. As parts stockpiles reach zero, the ability to make repairs is lost. Prudence dictates that systems be replaced prior to that point.

Tazewell County is at, or approaching, the lack of manufacturer's supply of replacement parts on several of the PSAP technology systems. In the near future, there will be no choice other than replace certain systems. In the case of the 9-1-1 phone system, the move to NG911 requires replacement and that date has been set at July 1st of 2020.

All of the systems to be replaced are of major cost and will require preparation of procurement documents and a competitive bid or proposal process. Some of the systems additionally require a certain amount of engineering, particularly radio systems, to insure acceptable operation. All the vendor submitted bids or proposals require evaluation before a contract is awarded. This 'front end' process consumes time and must be factored into procurement timelines to insure the completion of the installation process prior to the target date. Projected time-of-completion estimates are shown in the *IMPLEMENTATION SCHEDULE* section of this Report.

TELEPHONE SYSTEM REPLACEMENT

The current 9-1-1 telephone equipment is at end of practical life by manufacturer's standards. There appears to be enough salvageable components from the decommissioned PSAPs and the vendor's parts supply to continue use for 1-3 years. As discussed earlier, the phone CPE must be replaced to receive NG911 service.

The complete replacement as planned includes 2 PSAP controllers and 16 telephone answering positions. The controller is essentially a computer server and computer workstations at each position are microcomputers (PCs) with specialized software. There is little switching or wiring required as all communications are transported over computer networks.

While the PSAP telephone systems can be replaced at any time, it is prudent to wait for the State of Illinois to determine the method and vendor for aggregating and distributing NG911 service in the state. Any replacement prior to that determination and availability would require connection of the IP based equipment to the current incoming CAMA wireline 9-1-1 trunks from Centurylink. Adding that equipment to the new phone equipment increases the cost. It is needed only until the NG911 cutover, July of 2020. The initiation of the replacement project should coincide with the projected availability of NG911 from the state's provider.

CONSOLE SYSTEM FURNITURE

The cost table shown below includes a line item for replacement console furniture. The furniture replacement assumes the provision of only 12 console positions. It is assumed that the 4 relatively new console positions transferred from East Peoria to Morton will be usable for a large percentage, if not the entire lifetime of the new console furniture purchased.

RADIO CONTROL SYSTEM REPLACEMENT

The radio control system is required to allow telecommunicators to perform voice dispatch, maintain unit status, provide and record incident information. The use of voice communications will likely continue for the foreseeable future. To maintain communications with 2-way radio systems to over 46 different public safety agencies requires a complicated mix of transmitters, receivers and interconnecting methods. That is the purpose of the radio console system.

The equipment in use today is at the end of its useful lifetime because of new parts availability from the manufacturer. It can be maintained for a reasonable period because Tazewell County's service vendor continues to maintain a cache of replacement components. When those spares are exhausted, the system will require replacement.

The system in use today is based upon legacy technology. It is a communications switch which uses analog technology. Newer technology converts the audio sounds from voice messages to Internet Protocol and performs switching as a matter of computer networking. This allows a significant reduction in costs to communicate with digital base stations located away from the PSAP. It also promotes use of features such as digital encryption for end-to-end communications privacy.

The replacement of the radio console control system is not a simple process but it can be managed in a working environment. A new console control system is installed in the PSAP equipment room and connected in parallel with the existing equipment. Console hardware and software is upgraded one position at a time. Upon completion, the old system control equipment may be disconnected and removed.

POLICE RADIO SYSTEM REPLACEMENT

Of the systems to be replaced, the several different radio systems in use today are the most difficult to unify. At issue is the total number of communications channels required. There are many in use as the primary factor was the identity of the law enforcement agency. Each agency would have its own communications talk path and dispatcher regardless of activity level. That was achieved by each agency having its own 2-way radio system and licensed frequencies to talk on. As discussed in this document, having many individual systems on unique radio frequencies is problematic and expensive in a consolidated environment.

Over the years as population increased, new communities incorporated and the number of police and fire departments grew. The need for additional radio channels could not be met in urban areas as each frequency could not be issued to more than one agency within a certain geographical distance, usually from 50-100 miles, because of interference.

The Federal Communications Commissions responded to the need for more frequencies by decreasing the 'width' of the signal by 50%, nearly doubling the number of frequencies within the spectrum band. This relieved some of the need for more, but negatively affected the coverage area as the reduced signal was more difficult to receive. To accommodate public safety agencies, the FCC allocated approximately 900 channels in the 700 MHz band uniquely to public safety agencies. It appears to be the FCC's implicit desire to move all public safety agencies to this portion of the radio spectrum.

The nature of licensing channels also changed. The formulas used by the FCC to calculate output power caused a reduction in the signal coming from the base station antenna passing beyond the area of jurisdiction. This assisted in reducing interference and re-use of channels. However, this caused county and state agencies which cover a large area to install more transmission sites and use more equipment. In some cases, because of the municipal agencies lying within the county cloud of radio coverage, sharing of the regional radio system became commonplace.

However, the sharing of a single radio channel is dependent upon the level of activity/use of the channel. When the level of communications rises to the point of no break time between messages, the channel is insufficient for the number of agencies or units. Another channel must be used to separate the users to allow more communications or each user must wait until there is time to speak. In many cases, 2 or more users speak at once and no one is heard clearly.

Tazewell County and the City of Pekin chose a solution to this problem in 1999. They joined with Ragan Communications, a commercial provider of Shared Mobile Radio (SMR) services in Tazewell County. An existing trunked radio communications system was upgraded to provide for the additional channels needed by the Sheriff and Pekin. The trunked system automatically selects a frequency depending on the radio seeking to transmit and connects all the radios with the same group identification. The system used equipment from the General Electric Corporation and software named EDACS (Electronic Digital Access and Control System) to operate.

The financial arrangement for system operation included the County-City cooperative purchasing an EDACS controller upgrade to handle the additional groups as well as engineering, configuration and installation costs. Eleven (11) 800 MHz radio frequency pairs were licensed to the ETSB. Ragan Communications purchased additional base stations for certain sites in and around Pekin to handle the need for additional channels used by the public safety agencies. In return for Ragan's portion of the project, each County-City user radio incurred a monthly fee. Because the system belongs to Ragan, all maintenance and replacement costs are covered by the monthly fee.

While the system works well for users near the 6 base station antenna sites in and around Pekin, the Sheriff's Department must use mobile in-car radios to communicate in rural areas. Ragan recently added a site in Peoria County to improve communications along the Illinois River south of Pekin. Much of eastern and southern Tazewell County requires additional sites to provide radio communications for portable radios.

In addition to the requirement for additional coverage, the EDACS is reaching its support level end-of-life much like the PSAP 9-1-1 telephone and radio control systems. Harris Corporation which maintains the EDACS licensing announced that no new systems would be sold after 2017. Ragan Communications does maintain a significant inventory of spare EDACS parts so the immediate lifetime of the system is not in jeopardy. However, given its end-of-life, it would not be prudent to spend more money to expand the system at this time.

To achieve county-wide coverage more radio base station sites are needed on the east and south ends of the county. Sites are typically placed on ground which is above the average terrain or, to cover areas of high criticality for the users. In this case, a site in Morton is obvious. One or more sites will be required on the southern portion of the county. In addition, sites with only receivers are needed for the reception of weak portable radio signals.

The current method to communicate in the 700-800 MHz radio spectrum for public safety agencies has changed to digital modulation using APCO Project 25 protocols (P25). This protocol is an established standard so radios from multiple manufacturers are available to purchase. A side note of progress, the digital radios for users are significantly more expensive than the older analog radios by a factor of 2-3 times. It is not likely that competition will change this ratio in the future.

Choices for system replacement balance cost, coverage and available radio channels. To achieve a significant improvement in county-wide radio coverage multiple transmitters must be placed at different locations across the county. In some areas, if the adjacent sites transmit on the same frequency, radio signals will overlap and may cause interference. To prevent this condition, transmissions are made at exactly the same time. This is done using special 'simulcast' controllers to time the signals based on the distance between different sites. The simulcast controllers add expense to each channel the system uses.

The EDACS used by Ragan Communications allows the use of a different frequency for group communications at adjacent tower sites so simulcasting is not necessary. However, there must be a careful consideration of site frequencies depending on the operating area of the particular group and number of different groups. This was done to achieve the EDACS upgrade for the Tazewell County Sheriff and East Peoria.

P25 radio trunking does not permit the use of site agile frequencies so simulcasting must be used for regional based trunking. The channels at each site affect the number of groups able to simultaneously use the system. Furthermore, P25 trunked systems use a separate frequency pair (control channel) to communicate to the user radios. The control channel adds expense to the system as each site requires another base station.

The major decision factor to determine the cost of a county-wide police radio system is the number of channels or talk-groups to support the police agencies during busy periods. Currently the Tazewell County police agencies are using 5 different radio frequencies and talk groups for primary dispatch. It is projected that during periods of high radio system use, Pekin and East Peoria may require separate channels because of saturation of channel capacity; although, the actual time period requirement may be short. At this time, there are no actual time studies of channel saturation.

The busy period duration would then require a total of three channels or groups necessary for dispatch of all the police agencies. The system design only requires jurisdiction based channels in East Peoria and Pekin for dispatch segregation during busy periods. This reduces costs as those agencies do not require county-wide coverage.

In this scenario, only 2 channels require true countywide simulcast coverage. These channels would be for use by all agencies during lull periods of dispatch activity. All on-duty units could be managed at one console position at one radio position. Should a high-radio traffic incident occur during the lull period, it could be managed on the second channel, which would also serve as a mutual backup.

This scenario uses conventional channels and does not require a trunking controller or provision of an additional countywide channel for control. This saves significant cost in system procurement and implementation. If proper purchase specifications are used, the radio equipment purchased can be used in a future trunked system.

Should agencies desire an administrative channel, or a channel for additional use within the jurisdiction, an additional repeater base station may be installed at the particular site or sites. That purchase, at the discretion of the particular agency would not be a joint cost but would become part of the overall county-wide system.

The utility of this solution is a radio system replacement which consolidates the EDACS users with the other county based police agencies. It replaces ageing equipment and centralizes management and maintenance. On its inception it stabilizes the cost of user radios based on quantity purchase or state bid. The radios could also be used for interoperability with other agencies, particularly Peoria and the STARCOM21 system (on a fee basis). All radios would be programmed with the Illinois Terrorism Task Force (ITTF) interoperability channels. It would not require ongoing monthly user fees. Once the system is in operation; user management is done with the channel change switch rather than entering data into a trunking controller. Simple is better.

FIRE RADIO SYSTEM UPGRADE

Unlike the police radio systems which use a combination of EDACS 800 MHz and UHF frequencies, all of the fire radio dispatch/paging systems use the VHF radio spectrum. The only exception is the City of Pekin Fire Department which uses an EDACS group for the voice portion of the PSAP communications. Like the many police agency based systems most of the fire/EMS agencies have licensed a frequency, installed a base station and have maintained the system independently.

The fire radio system upgrade is similar to the police system upgrade as the goal is to have countywide coverage and control of all agencies at a single console position. The current busy-period activity levels of all the agencies combined do not show a requirement for more than a single radio channel. However, prudence dictates the implementation of a second channel for a major event or backup due to a failure of the primary channel.

Unlike the police radio systems, changing the radio frequency band is not required. The VHF frequencies are used by all agencies but one. The conversion of the City of Pekin back to VHF mobile and portable radios will not be a major expense. All of the required VHF base station sites are in place. The challenge of system design is to select and license 2 VHF frequencies suitable for high power use. Similar to the police alternative, should an agency desire a radio channel for administrative purposes, the existing stand-alone base stations may be used for strictly jurisdictional coverage. The project uses drop-in repeater/GPS packages, using the existing VHF antenna and ties them to a simulcast controller.

MAJOR INITIATIVE FINANCING

The purchase and financing of the embedded 9-1-1 PSAP technology has generally been undertaken by the Tazewell County ETSB as part of its charter to provide 9-1-1 services using telephone surcharge monies. Agencies have typically funded their own radio system infrastructure as those systems typically covered only the agency jurisdiction and it was not shared with other police or fire departments. However, the use of 9-1-1 funds is authorized to purchase and maintain dispatch radio systems.

The changes undertaken to consolidate public safety communications under one unified organization are a result of mandated efficiency. The ability to consolidate user agencies on to a single communications channel further enhances that efficiency. Separate radio channels or groups are only required during periods of high activity. The ability to communicate with an increased number of controlled units, independent of agency, reduces the number of staffed console positions and overall cost of operations.

The following table outlines estimated cost to implement the identified major replacement initiatives. It assumes that as a major purchase, a competitive procurement will be required. All facilities use existing radio sites. Some sites may require new facilities such as microwave radio for network communications. This cost is included in the Police Radio System Replacement. The Fire Radio System Upgrade does not include microwave radio links as it assumes the microwave would otherwise be at the particular site from the Police Radio System project. If the fire project were initiated prior to the police project the costs would shift approximately \$82,500.

<i>Major Initiative Estimated Cost Projections</i>	
Initiative	Estimated Cost
911 Telephone System Replacement (16 Positions)	\$591,744
Console Furniture Replacement (12 Positions)	\$145,090
Radio Control Console Replacement (16 Positions)	\$516,209
Police Radio System Replacement	\$1,879,346
Fire Radio System Upgrade	\$312,111

The above radio system prices do not include the portable or mobile system subscriber units. The radios are typically purchased by the particular agency providing response services. Agencies consider whether or not to buy enough radios to equip every responder (fleet plan) or just provide for maximum shift use and transfer the radio at shift change. Typically, the personal portable program extends the maintenance life of the radio.

The competitive price for the base P25 700/800 portable radio is approximately \$2,100 and the mobile \$2,600. The P25 trunking option adds approximately \$400 to the cost. Police P25 digital portable and mobile radios are also available on Illinois state bid schedules and may be used for STARCOM21 and the Peoria trunked system if so programmed and equipped. Use of those systems may incur a fee per radio.

The analog VHF replacement radios for the Pekin Fire Department are significantly less expensive. Typical public safety grade radio pricing for portables is approximately \$850 and mobiles approximately \$1,100. In some cases fire departments require 'intrinsically safe' radios for use in hazardous environments which adds significantly to the cost.

Finally, the above estimated amounts represent current year manufacturer's suggested retail pricing (MSRP). It is likely that the MSRP will increase on a yearly basis by 1-3%. However, given bid based procurement, competitive pressure may lower profit margins below MSRP.

AGENCY COMPARISON

Operation of the new organization is premised upon the participation of the client agencies to support the aggregate operating expense of the new organization and capital improvements not otherwise funded through surcharge or grants. In the case of Tazewell County, where every agency will participate under a single organization, it is important to select a mechanism which is fair and recognizes the use and benefit the agency derives from the PSAP operation.

Prior to the implementation of the 9-1-1 surcharge, emergency dispatch was a cost traditionally assumed by a county or municipal police agency. At that time, there was little standardization or qualification of the call receipt and dispatch process. Few smaller agencies were computerized. Typically, civilian dispatchers would perform many additional tasks and would be supplemented by law enforcement officers when required.

The 9-1-1 surcharge money was intended to assist in support of acquiring enhanced telephone technology and supporting the training of dispatchers to the new role of *telecommunicator*. However, the legislation included several other areas of related expense, notably computers and radio communications systems along with the ability to subsidize salaries.

The intent of the revised legislation is the mandate to make the 9-1-1 call taking and dispatch more efficient. This is intended by reducing the number of 9-1-1 PSAPs and in practice, increasing the work activity level of the telecommunicator. In theory, the idea is sound and, through efficiency and reduction in infrastructure requirements, should decrease the cost of providing the service. In many cases of smaller PSAPs, the overall 9-1-1 call taking and dispatch workload is very low and, unless tasked with other duties, the telecommunicator essentially waits a significant amount of time for the phone to ring. The current cost of providing 9-1-1 services in such an environment should be greatly improved through consolidation.

There are several available factors to calculate a fee structure. Each of them has definable metrics and an arguable basis for apportionment.

- Population
- Land Area
- Budget
- Assessed Evaluation
- Number of Response Units/Personnel
- Number of 9-1-1 Calls
- Number of Activities

Of the above categories, several are based upon factors not necessarily related to the use or operation of the PSAP. The first 4 relate to demographic characteristics influencing the nature of services provided by the governmental unit. Typically, these factors are difficult to use for fee apportionment because they lack direct correlation to the services provided. In many cases, such as population and land area, jurisdictional borders may overlap.

Metrics such as the number of response units, 9-1-1 calls and/or activities are notably better factors. They directly influence the amount of service received from the PSAP and can be compared on an equitable basis. However, using the number of response units/personnel significantly impacts fire departments as many would count volunteer or paid by call as well as special use equipment such as vehicles used specifically for brush fires.

The count of 9-1-1 calls or activities are significantly better as they reflect actual work done by the PSAP for the particular agency. The use of 9-1-1 calls may be problematic where an agency with very active roadways would be adversely affected by incidents such as traffic accidents which receive multiple calls from onlookers. Finally, the total yearly count of 9-1-1 calls is only attributable to location and is not assessable to a particular police or fire agency.

Activity Based Assessment

The use of incident activity is a widely accepted metric for assessing PSAP fees. It is sometimes problematic when agencies combine and have different definitions as to what is a countable activity. It is not a problem for Tazewell County agencies as all have been using the same CAD system for recording incidents in a uniform manner.

Of the incident types to be counted, it should be noted that law enforcement activities are much more frequent than those for fire or ambulance services. Particularly in Tazewell County, law enforcement agencies do a remarkable number of self-initiated activities. These activities are not the result of an answered 9-1-1 call and have little telecommunicator workload prior to notification. In order to not discourage self-initiated activities, it is recommended that those statistics not be used in assessable incident counts.

In the case of Tazewell County agencies in 2016, based on incidents generated from 9-1-1 calls, the ratio is 3.6 law enforcement incidents to each fire/EMS incident. This does not necessarily relate to the amount of work performed by the telecommunicator as fire dispatch tends to be more involved per incident given the paging process. In some cases, it includes the provision of Emergency Medical Dispatch (EMD) pre-arrival instructions. While further parsing the percentages of Calls-For-Service incident counts could occur based on agency type, it is arguable that simple totals serve the process best. The following table assigns agency percentages based upon 2016 CFS records.

Agency Activity Comparison					
Fire /EMS Agencies	CFS	Share	Police Agencies	CFS	Share
ADVANCED MEDICAL TRANSPORT	4,657	4.4%			
ARMINGTON FPD	4		ARMINGTON POLICE DEPT	41	0.0%
CREVE COUER FIRE DEPT	868	0.8%	CREVE COUER POLICE DEPT	4,957	4.7%
CINCINNATI FPD	295	0.3%			
DEER CREEK FPD	118	0.1%	DEER CREEK POLICE DEPT	177	0.2%
DELAVAN FPD	264	0.3%	DELAVAN POLICE DEPT	1,134	1.1%
EAST PEORIA FIRE DEPT	3,720	3.5%	EAST PEORIA POLICE DEPT	18,069	17.1%
FORMAN FPD	56		FONDULAC PARK DISTRICT POLICE	692	0.7%
GERMANTOWN HILLS FPD	26	0.0%			
GREEN VALLEY FPD	137	0.1%	GREEN VALLEY POLICE DEPT	191	0.2%
HOPEDALE FPD	152	0.1%	HOPEDALE POLICE DEPT	293	0.3%
MACKINAW FPD	212	0.2%	MACKINAW POLICE DEPT	659	0.6%
MORTON FIRE DEPT	2,634	2.5%	MORTON POLICE DEPT	7,657	7.3%
MARQUETTE HEIGHTS FIRE DEPT	168	0.2%	MARQUETTE HEIGHTS POLICE DEPT	1,969	1.9%
MINIER FPD	202	0.2%	MINIER POLICE DEPT	541	0.5%
NORTH PEKIN FIRE DEPT	243	0.2%	NORTH PEKIN POLICE DEPT	2,543	2.4%
NORTH TAZEWEILL FPD	1,026	1.0%			
PEKIN FIRE DEPT	5,448	5.2%	PEKIN POLICE DEPT	21,755	20.6%
SPRING BAY FPD	132	0.1%	PEKIN PARK DISTRICT POLICE	725	0.7%
SCHAEFFERVILLE FPD	335	0.3%			
SOUTH PEKIN FIRE DEPT	302	0.3%	SOUTH PEKIN POLICE DEPT	837	0.8%
			TAZEWEILL CO ANIMAL CONTROL	952	0.9%
FIRE DISTRICT TRANSFERS	873		TAZEWEILL CO COURT SERVICES	178	0.2%
TREMONT FIRE DEPT/RESCUE 702	296	0.3%	TAZEWEILL COUNTY SHERIFFS OFFICE	10,162	9.6%
WASHINGTON FIRE DEPT	1,380	1.3%	TREMONT POLICE DEPT	874	0.8%
			WASHINGTON POLICE DEPT	7,457	7.1%

Agency Offset Costs

The above estimates show the anticipated fee percentage each agency or municipality will be assessed and can be compared to current costs of PSAP services or budget. In the case of East Peoria, Morton and Washington, there will be additional internal cost to maintain operations for the mid-term future. The most significant cost is the maintenance of lobby services otherwise provided by departing PSAP personnel. These services include walk-in assistance, records retrieval and sales, collection of fines and fees as well as performance of other administrative tasks. While Morton is a remaining PSAP site, no lobby services will be offered by PSAP personnel.

It is assumed that these are business hour services available 12 hours per day. Lobbies will be equipped with an emergency telephone connected to the 9-1-1 PSAPs should walk-in assistance be required. Procedure will dictate dispatching an officer to the Police Station for assistance during non-business hours. Cost is based on clerical level staff salary and benefits.

Agency Offset Costs

Agency	Yearly Cost
East Peoria Police Department	\$46,520
Morton Police Department	\$46,520
Washington Police Department	\$46,520

In addition to personnel cost, the East Peoria and Washington Police Departments will not be able to reclaim space in their current PSAP equipment rooms until alternative radio communications systems are commissioned. This is not likely to occur until 2020 or later. The current control equipment will need ongoing conditioned power and air conditioning. As the ongoing costs are relatively low and currently shown in an aggregated departmental budget they do not represent a significant monetary consideration. On the positive side, East Peoria and Washington will be able to reclaim space in the Police Department currently used by dispatch operations.

Rental Offsets

The Tazcom Organization which operates the Pekin PSAP exists through an intergovernmental agreement between Tazewell County and the City of Pekin. It is assumed that at some time during the consolidation process the TC³ organization will replace all the existing PSAP operating bodies as the sole organization for 9-1-1 services countywide. The Pekin (Tazcom) PSAP building is owned by the City of Pekin which receives rent from the Tazcom budget. In addition to rent, Tazcom also supports period repairs or improvements to the PSAP space. It is further assumed that the TC³ organization will continue the rental process with the City of Pekin under a new agreement.

The City of Morton has made a significant effort to prepare for the possibility of mandated consolidation. It has retained an architect and done the preliminary planning for PSAP expansion. Currently, Morton has not yet made an official commitment of funding the Police Department construction project which also includes additional new space to replace offices displaced by the PSAP expansion. The architect's total construction project estimate is \$814,000 of which \$441,000 is attributable to the space allocated to dispatch. Review of the preliminary drawings indicates the likelihood of an additional \$50,000 be budgeted for security measures to comply with published standards.

CONSOLIDATED OPERATION AND GOVERNANCE

The provision of 9-1-1 call taking and emergency response dispatch service requires a significant amount of direction and oversight. Operational services are provided both to the calling public and each agency participating in the response. Every step of the 9-1-1 process involves significant use of cognitive analysis and competent use of technology. There is little room for error.

Currently in Tazewell County there are 2 models of governance in use. The traditional form of PSAP operation is administered by the particular agency where the PSAP is located, typically by a law enforcement agency. This model developed from the principal response role played by police and sheriff's departments within their jurisdictions. The communications component transitioned from the basic function of answering telephone calls to the 9-1-1 call processing system of today. While the overall process remained the same, the addition of technology has required training of personnel and sophistication far beyond that required pre-9-1-1.

This paradigm has complicated the operation of most smaller agency based PSAPs as hiring, training, qualification, certification and oversight of 9-1-1 telecommunicators requires a significant amount of personnel management, as well as skills beyond typical agency supervision needs. Oversight by a law enforcement supervisor with line or other staff management duties is not optimal considering the operational understanding required. In many instances, the lieutenant or sergeant must also be cognizant of and comply with union contracts and grievance procedures. In many cases a telecommunicator is given supervisory duties but has little time or resource to provide in-depth management or training. A quality assurance mechanism is typically used only to review incidents of a medical response nature.

Having a PSAP operated by a law enforcement agency is particularly vexing to a fire department client agency. Fire and ambulance dispatch has different criteria than law enforcement. Almost all incidents are critical and cannot be placed on a wait list. The telecommunicator must alert other agencies providing mutual aid. Fire equipment may need to be transferred to different locations. A major incident may require the dispatch of several agencies. Law enforcement appears (whether justified or not) to receive more attention than fire when using 2-way radio systems. In Tazewell County, 3 of the 4 PSAPs are Police Department based.

As the provision of 9-1-1 service became more professionalized through standards and training, the preferred method of agency consolidation changed from a hosting agency to a consortium of municipalities or agencies into a jointly governed organization. The shared budget and combined 9-1-1 call loading with corresponding incident response made staff time more productive. Tazcom is an example of an agency derived from intergovernmental agreement.

Although Tazcom exists as an example of a joint government agency and could possibly serve as a basis for further consolidation, it is preferred and agreed by members of the ETSS that a new expanded agency be formed to include stakeholders other than only Pekin and Tazewell County. Furthermore, combination of the existing agency run PSAPs and the Tazcom agencies has many long-term benefits when considering the possible replacement of radio communications infrastructure, management and training of operational staff.

Organization and Administration

The first necessary accomplishment must be the creation of a new organization to initiate and manage the consolidated operation. For purposes of this report the organization is titled 'Tazewell County Consolidated Communications' or TC³. The organization must be formed through an Intergovernmental Agreement. A proposed agreement is attached as an appendix to this report. It should be noted that while this agreement contains the elements required for consolidation, it has not been prepared or reviewed by an attorney and should not be adopted without legal review.

Management of TC³ is best accomplished through a 2-step process of financial governance and operational oversight. This is done through financial review by a Governance Board and performance oversight by an Operations Board or Committee. This is a widely accepted method of governance for consolidated agency operation.

The suggested governance board of TC³ is generally based on the participation percentages of the founding members. They include East Peoria, Morton, Pekin, Tazewell County and Washington. It should be noted that membership on the governance board requires knowledge of funding sources as well as accepting responsibility to commit budgetary amounts in the name of the funding body. Membership is typically, elected or appointed members of government as well as agency principals with an understanding of the public safety process.

The following table lists suggested participation on the Governance Board. In addition to client representation, the Governance Board should also seat a representative from the Tazewell County Board and the Tazewell County ETSB. The table shows no particular governmental title in the Unit of Government column. The representative position within the governmental unit should be flexible. This allows appointment of the person with the best responsibility, understanding and position to assist in managing the operation.

<i>TC3 Governance Board Representation</i>	
Unit of Government	Number
City of Pekin	2
City of East Peoria	2
Tazewell County Sheriff	1
City of Morton	1
City of Washington	1
Fire Districts and Other Municipalities	2
Tazewell County	1
Tazewell County ETSB	1
TOTAL:	11

The second mechanism of oversight is the Operations Board or Committee. This unit is tasked with analysis of operations. Items of review are policies, procedures, complaints and incident review. Members must have a working knowledge of response activities and are typically agency supervisory staff with line responsibilities. A representative of the ETSB is also included to identify issues with 9-1-1 call taking and quality assurance.

<i>TC³ Operations Board/Committee Representation</i>			
Agency	Police	Fire/EMS	Other
Pekin	1	1	
East Peoria	1	1	
Morton	1	1	
Tazewell County Sheriff	1		
Washington	1	1	
Creve Coeur	1		
AMT Ambulance Service		1	
Rural Fire Districts		1	
Tazewell County ETSB			1
Total:		13	

Participants to the agreement, particularly agency principals and their governance bodies, must be given a period of time to review the agreement and determine if changes are required. While the fee structure outlined in this report is a commonly accepted formula, there must be consensus among the participants who may suggest alternative calculations. It is suggested that the fee formula be such that the percentage allocations be in place for a period not less than 3 years before review or alteration. This allows for participant budget stability where activities may change significantly on a particular year. Furthermore, the formula should not discourage any agency from promoting self-initiated unit activities.

After the agreement is executed and the stakeholders have selected the Governing Board representatives, the board must meet and approve the hiring of a Director. This is imperative as the job task description of the Director includes project management responsibility for consolidation as well as administration of the TC³ organization. The director position should be filled before the end of 2017.

Personnel

The **Director** has the primary responsibility to develop and maintain the organization described within this report. Preliminary tasks include familiarization with the Tazewell County agencies and operating environment. This includes meetings with the Governance Board and the Operations Board as well as visits to pertinent locations comprising the participants and resources used in providing the organization's services. First responsibilities include the preparation of job descriptions, qualifications, compensation and other criteria necessary to hire staff. In addition, the Director will identify and coordinate with outside services such as legal, accounting, payroll, supply vendors and other employee support resources. The Director must have significant personnel management level skills and experience; the understanding of business accounting, budgeting, financing and processing mechanisms; public safety agency operations, communications needs and standards; legal requirements and restrictions; technology; understanding and commitment to quality and service as otherwise expressed in certification programs such as ISO 9001:2008.

Once familiar with the overall organizational environment and proposed process, the new Director will proceed to implement a personnel staffing and hiring plan. Proposed open positions include the following staff:

- Assistant Director
- Data & Communications System Manager
- Training & Quality Assurance Manager
- Telecommunicators (29)
- Accounting Clerk

The hiring process includes advertising for the open positions, interviews, testing (if required) and preparing a formal job offer. The timing of personnel hiring coincides with the need for staffing and the transfer of responsibilities from particular sources such as the agencies currently providing PSAP services and the ETSB. The exact dates of transition will be approved by the Governance Board although, this document recommends no later than April 18th, 2018.

Working conditions, salaries and benefits otherwise shown in the existing collective bargaining agreements for line level positions should be considered in the transition process. The telecommunicator staff may request and be given the opportunity to elect a bargaining representative and negotiate a collective bargaining agreement. Given the difference in working conditions, primarily the 2-site operation, this process should take place after the transition has occurred and experience has been gained with scheduling and deployment.

The **Assistant Director** serves as the secondary source of responsibility and decision making. In addition, the position coordinates and takes a primary supervisory role for administrative and technical staff needs and reporting. The personnel include the Training/Quality Assurance Manager, the Data & Communications Manager and the Accounting Clerk. In addition to the administrative and technical staff, the Assistant Director oversees operation of the telecommunications services through reporting by the telecommunicator team leaders. This person must have supervisory level experience in public safety communications, a working knowledge of communications technology systems and the overall understanding of operational management and documentation. Documentation requirements include the management, maintenance and review of organizational policies, procedures and communications support plans.

The **Data & Communications Systems Manager** is responsible for the management and operation of the technology used for 9-1-1 call taking and dispatch. Objectives include maintaining reliability and performance, recovery from hardware failure, setting requirements, monitoring the operating environment and maintaining systems documentation. Management tasks include hardware and software configuration, creation of training documentation, responding to operational failure and maintaining a liaison with technology vendors. Line level tasks include equipment troubleshooting and user coaching. The person must have working knowledge of data center infrastructure, networks, interfaces and data conversion, public safety software applications, telephone and radio control technology, security including access control and malware/virus protection.

The **Training/Quality Assurance Manager** supervises the training and oversight of telecommunications personnel. Job responsibilities include identification and scheduling of training, maintenance of telecommunicator staff certification status, review of work product, the identification of performance requirements and recommendation of remedial alternatives when necessary. Additional responsibilities include preparation of statistical reports, compilation and distribution of training materials, preparation and delivery of training where appropriate and participation with the Director in Operations Board initiatives.

The classification of **Team Leader** is given to an experienced *telecommunicator* knowledgeable in all aspects of service provision, showing particular leadership characteristics and assigned additional roles supporting shift based operations. In addition to telecommunicator duties, the Team Leader prepares operational schedules for the particular shift, observes operations, provides staff mentoring, coordinates and participates in training with the Training Manager, provides line level identification and preliminary troubleshooting of technology problems and coordinates with the Data and Communications Technology Manager for equipment repair or replacement. This is not a job position or supervisory assignment; it is a Telecommunicator classification with increased responsibility and remuneration. It is expected that Team Leaders will perform telecommunicator duties when needed.

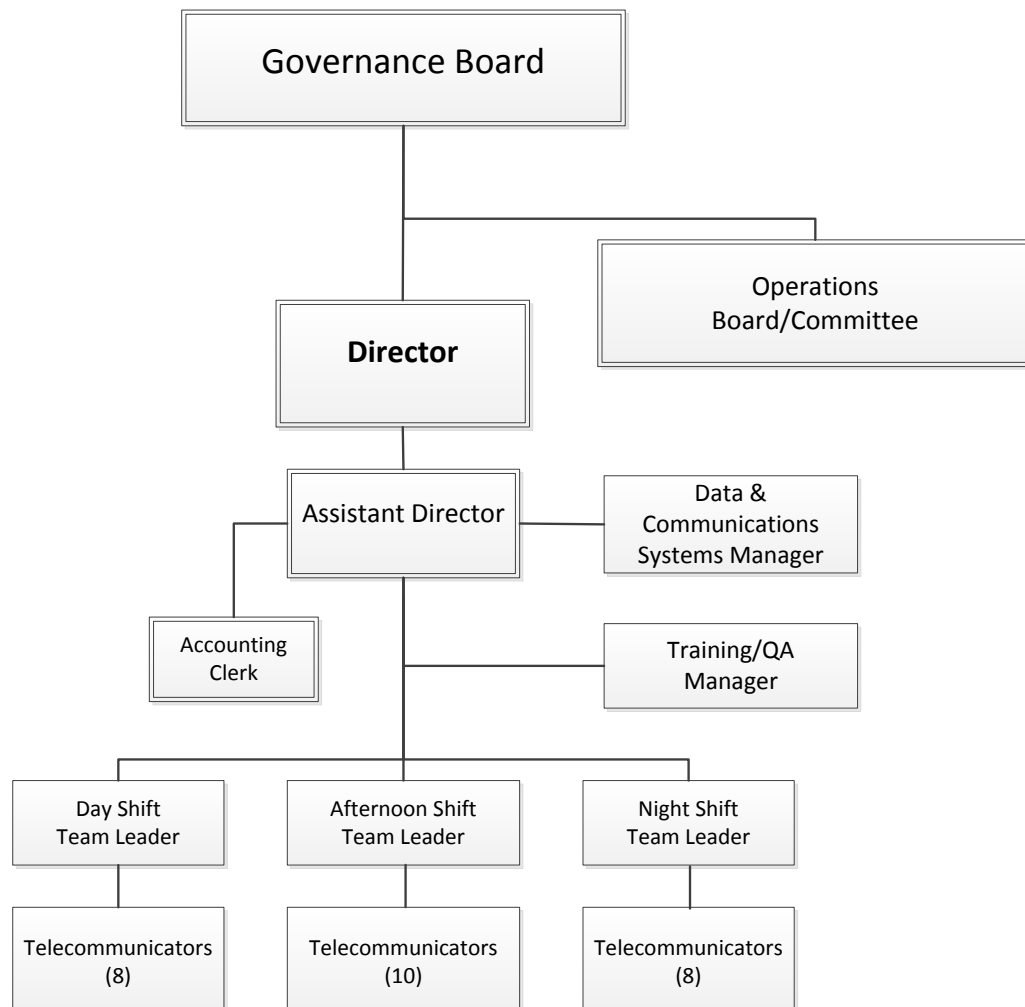
The position of **Telecommunicator** is responsible for providing call-taking, response agency dispatch and informational services. Call taking and processing includes telephone answering, assessing the nature, severity and location of the incident or request, transferring the call when necessary, providing medical pre-arrival instructions when necessary and making a computerized record if dispatch is required. Response agency dispatch includes identification and notification of the proper response unit(s), communications by 2-way radio or other means, maintenance of unit status, retrieval and dissemination of requested information and recording all required aspects of the incident into the computerized information system. In addition, the telecommunicator may be required to do other related tasks such as the activation of outdoor warning sirens, transfer information to other public safety organizations, maintain work area cleanliness and interact with the public or other persons during tours or inspections. Given the nature of the operations in Tazewell County, the telecommunicator may be assigned to work at a different location on a periodic basis.

It is assumed that current PSAP telecommunicator employees will receive priority consideration for hiring into the same level position as employed. In concept, factors such as longevity, certification and other pertinent performance criteria will be used in assessing assignment and pay level factors. Certain aspects of testing may be waived.

The position of **Accounting Clerk** is responsible for providing administrative support to the organization. Support duties include the maintenance of accounting information and books of records including payroll, receivables and accounts payable; preparation of revenue and expense reports; receipt and processing of organizational correspondence; purchase and maintenance of administrative materials and supplies; message support for administrators and other office type duties.

PROPOSED
Tazewell County Consolidated Communications TC³

Organizational Chart



Fee Structure Comparison

The formation of the new agency considers that all participating agencies share operational costs in a reasonable and equitable manner. As explained in the prior chapter, the fee mechanism must be simple and reflect a metric which is fair to the participating agencies. Governance representation based on the level of fee contribution, which also relates to population and agency activity, is a practical and equitable mechanism to oversee budgets and required capital expenditures for major improvements.

By agreement of the ETSB, overall consolidation costs shown in the *PSAP Consolidation Conversion Costs* table will be paid by surcharge funds. These costs are required to support the system moves and changes required during the consolidation process. The costs attributable to improvement of facilities will be paid by the particular owner of the facility.

The following *Agency Fee Comparison* table relates agency contributions by activity percentage based on the previous *TC³ 5-Year Operational Budget*. For informational purposes, the proposed fees may be compared to the current costs as shown in the prior *Tazewell County PSAP Comparison* and *Current PSAP Client Fee* tables.

The first year in the table represents the 4-month organizational period of TC³. This fee would be due on or about January 1st, 2018. Ongoing yearly fees are typically due on a quarterly or monthly basis as decided by the TC³ Governing Board.

It should be noted that the percentage fee structure on the following page incorporates activity statistics generated by the CAD system. It includes fees for agencies that are located in other counties and where Tazewell County PSAPs may dispatch the incident based on the receipt of the particular 9-1-1 call. Also, some listings may reflect activities which are shared between agencies in providing mutual aid. Most of the anomalies represent only a small or insignificant portion of overall activities and the fees shown will not be significantly affected by their omission in a later calculation.

Agency Fee Comparison

Agency Fee Comparison	Share	2017	2018	2019	2020	2021
ADVANCED MEDICAL TRANSPORT	4.5%	\$4,490	\$142,290	\$144,155	\$146,754	\$148,057
ARMINGTON FPD	0.0%	\$4	\$122	\$124	\$126	\$127
ARMINGTON POLICE DEPT	0.0%	\$40	\$1,253	\$1,269	\$1,292	\$1,303
CREVE COUER FIRE DEPT	0.8%	\$837	\$26,521	\$26,869	\$27,353	\$27,596
CREVE COUER POLICE DEPT	4.7%	\$4,779	\$151,456	\$153,442	\$156,208	\$157,595
CINCINNATI FPD	0.3%	\$284	\$9,013	\$9,132	\$9,296	\$9,379
DEER CREEK FPD	0.1%	\$114	\$3,605	\$3,653	\$3,718	\$3,751
DEER CREEK POLICE DEPT	0.2%	\$171	\$5,408	\$5,479	\$5,578	\$5,627
DELAVAN FPD	0.3%	\$255	\$8,066	\$8,172	\$8,319	\$8,393
DELAVAN POLICE DEPT	1.1%	\$1,093	\$34,648	\$35,102	\$35,735	\$36,052
EAST PEORIA FIRE DEPT	3.6%	\$3,587	\$113,661	\$115,151	\$117,227	\$118,267
EAST PEORIA POLICE DEPT	17.3%	\$17,421	\$552,079	\$559,317	\$569,400	\$574,456
FONDULAC PARK DISTRICT POLICE	0.7%	\$667	\$21,143	\$21,421	\$21,807	\$22,000
FORMAN FPD	0.1%	\$54	\$1,711	\$1,733	\$1,765	\$1,780
GERMANTOWN HILLS FPD	0.0%	\$25	\$794	\$805	\$819	\$827
GREEN VALLEY FPD	0.1%	\$132	\$4,186	\$4,241	\$4,317	\$4,356
GREEN VALLEY POLICE DEPT	0.2%	\$184	\$5,836	\$5,912	\$6,019	\$6,072
HOPEDALE FPD	0.1%	\$147	\$4,644	\$4,705	\$4,790	\$4,832
HOPEDALE POLICE DEPT	0.3%	\$282	\$8,952	\$9,070	\$9,233	\$9,315
MACKINAW FPD	0.2%	\$204	\$6,477	\$6,562	\$6,681	\$6,740
MACKINAW POLICE DEPT	0.6%	\$635	\$20,135	\$20,399	\$20,767	\$20,951
MORTON FIRE DEPT	2.5%	\$2,540	\$80,479	\$81,534	\$83,004	\$83,741
MORTON POLICE DEPT	7.3%	\$7,382	\$233,951	\$237,019	\$241,292	\$243,434
MARQUETTE HEIGHTS FIRE DEPT	0.2%	\$162	\$5,133	\$5,200	\$5,294	\$5,341
MARQUETTE HEIGHTS POLICE DEPT	1.9%	\$1,898	\$60,161	\$60,949	\$62,048	\$62,599
MINIER FIRE DEPT	0.2%	\$195	\$6,172	\$6,253	\$6,366	\$6,422
MINIER POLICE DEPT	0.5%	\$522	\$16,530	\$16,746	\$17,048	\$17,200
NORTH PEKIN FIRE DEPT	0.2%	\$234	\$7,425	\$7,522	\$7,658	\$7,726
NORTH PEKIN POLICE DEPT	2.4%	\$2,452	\$77,699	\$78,717	\$80,136	\$80,848
NORTHERN TAZEWEILL FPD	1.0%	\$989	\$31,348	\$31,759	\$32,332	\$32,619
PEKIN FIRE DEPT	5.2%	\$5,253	\$166,458	\$168,640	\$171,680	\$173,205
PEKIN POLICE DEPT	20.8%	\$20,975	\$664,700	\$673,416	\$685,555	\$691,642
PEKIN PARK DISTRICT POLICE	0.7%	\$699	\$22,152	\$22,442	\$22,847	\$23,049
SPRING BAY FPD	0.1%	\$127	\$4,033	\$4,086	\$4,160	\$4,197
SCHAEFFERVILLE FPD	0.3%	\$323	\$10,236	\$10,370	\$10,557	\$10,650
SOUTH PEKIN FIRE DEPT	0.3%	\$291	\$9,227	\$9,348	\$9,517	\$9,601
SOUTH PEKIN POLICE DEPT	0.8%	\$807	\$25,574	\$25,909	\$26,376	\$26,610
TAZEWEILL CO ANIMAL CONTROL	0.9%					
TAZEWEILL CO COURT SERVICES	0.2%	\$10,887	\$345,015	\$349,538	\$355,840	\$358,999
TAZEWEILL COUNTY SHERIFFS OFFICE	9.7%					
TREMONT FPD/RESCUE 702	0.3%	\$285	\$9,044	\$9,163	\$9,328	\$9,411
TREMONT POLICE DEPT	0.8%	\$843	\$26,704	\$27,054	\$27,542	\$27,786
WASHINGTON FIRE DEPT	1.3%	\$1,331	\$42,164	\$42,717	\$43,487	\$43,873
WASHINGTON POLICE DEPT	7.1%	\$7,190	\$227,841	\$230,828	\$234,989	\$237,075
TOTALS:	100.0%	\$100,789	\$3,194,045	\$3,235,924	\$3,294,258	\$3,323,506

IMPLEMENTATION SCHEDULE

Under the temporary waiver issued by the Statewide 9-1-1 Administrator, the reduction in the number of operating PSAPs must be complete by July 1st of 2019. Under this plan, the East Peoria Police Department and Washington Police Department PSAPs will be decommissioned and 9-1-1 services will be consolidated into the Pekin (Tazcom) and Morton Police Department PSAPs. The process to accomplish the consolidation has several different components.

In addition to the physical processes of construction and installation, a new consolidated 9-1-1 services organization and governing mechanism must be initiated, funded and employees hired. Given that construction will occur at the Morton Police Department to increase the space of the current PSAP, an interim plan of operation and staffing is required. The interim plan must encompass a multi-month period of operation with the Morton PSAP closed during the construction period.

The following table lists key initiatives requiring schedule coordination. The table lists a practical time period for completion. Some initiatives are split into phases required by procurement milestones.

Tazewell County Consolidation Major Initiatives

Initiative and Tasks	Months
Creation of Consolidated Organization	
Governmental Unit Review and Approval	3
Hiring of Director	2
Consolidation Planning, Configuration, Agreements	3
Staffing & Changeover Process	3
Radio System Modifications – Link Installation, Console Connect	2
Telephone System Configuration – Line Installation	2
Morton PSAP Configuration	
Planning and Engineering	4
Interim Move to Pekin	1
Construction & Configuration	10
Radio Site Move (Complete)	2
Console Electronics Transfer	1
Washington PSAP	
Radio/Telephone System Cutover & Move	1
Console/Electronics Transfer	1
East Peoria PSAP	
Install 4 th Console Electronics	1
Modify Phone Circuits	1
Console Electronics Transfer	1

Initiative and Tasks	Months
Telephone System Replacement (Option – Includes Furniture)	
Planning and Configuration	2
Procurement and Vendor Selection	4
Installation and Testing	6
Console System Replacement (Option)	
Planning and Configuration	2
Procurement and Vendor Selection	4
Installation and Testing	6
Police Radio System Replacement (Option)	
Planning, Engineering	3
Frequency Acquisition (If required)	5
Procurement, Vendor Selection	4
Installation and Testing	6
Fire Radio System Upgrade (Option)	
Planning, Engineering	3
Frequency Coordination	1
Procurement, Vendor Selection	4
Installation and Testing	6

Facility Preparation and Construction

Both the Morton and Pekin facilities require modification to provide useable space for 8 console positions. The nature of the modifications and construction are detailed in the **Conversion Cost** section. It should be noted that the process for both locations does require additional engineering, architectural work and approval of both owners.

Modifications and Configuration

Although 2 PSAPs will be decommissioned in the consolidation process, they will still require the addition of technology to maintain operations. This includes components to remote radio control and communications to the other PSAPs. Subsequent to install these devices must be tested for proper operation and reliability.

Communications Systems Options

The utility of consolidation is premised on safely increasing the amount of work a telecommunicator performs. This amount must be reasonable and the systems designed to support simplicity of operation to minimize errors. The primary processes of communication are telephone, 2-way radio and computer entry through a keyboard, mouse or touch screen. Minimizing overall complexity is essential.

The CAD system currently supported by the ETSB has proven acceptable for data entry and dispatch management. It is supported by the current ownership and is likely to see continued maintenance through year 3 of the consolidation process. Under the proposed consolidation process, local support of CAD operation moves from the ETSB to the new organization. While there is reason to seek a decrease in overall CAD software support costs, this initiative is not part of this plan.

The current 9-1-1 telephone system is nearing its end of life based on manufacturer support. A new telephone system will be required to support NG911. The statewide implementation date for NG911 is July 1st, 2020; however, the provision of NG911 services is dependent on the state or other organization serving as the clearinghouse for PSAP routing. When that occurs, the option for replacing the telephone system and radio controls as an integrated package should be analyzed for efficiency and cost. The possibility exists that the state may provide the telephone answering equipment through a franchised vendor.

The radio control console equipment should be replaced in the near future. However, the move to IP based console equipment will complicate control of the existing single-agency systems using the interim IP modem based solutions. Additional base-station site equipment may be required to communicate to the IP console. Should the TC³ organization and the ETSB decide to implement a digital radio system in replacement of the EDACS or as a Morton solution, a new IP based radio console system will be required for base station control.

Overall goals of radio system replacement in a consolidated environment include interoperability and jurisdiction wide coverage. That is, agencies can share channel use when required, a common radio configuration for economy of scale in purchasing and maintenance and an infrastructure that permits any radio to be used anywhere in the county. Given the overall land area of Tazewell County, this coverage cannot be achieved with a single transmit site. Given the level of busy-period activity channel loading, law enforcement in Tazewell County requires a minimum of 3 simultaneous talk channels.

The current EDACS uses 6 radio sites and provides limited coverage on the southwestern portion of Tazewell County. It only uses 2 talk groups for police dispatch. A minimum of 3 additional transmit sites are required to increase overall coverage.

Initial operation of 3 conventional channels in a simulcast mode, with the purchase of qualified equipment would allow future conversion to a trunked system should more channels be required. Costing for the proposed system includes radio infrastructure and assumes that a suitable tower site will be available in Morton and at other locations in central and southeast Tazewell County. The sites also require a data connection for network access.

Replacement of the EDACS technology requires an engineering review to determine if changes to radiated power, transmit and receive sites, antenna heights, etc. will improve coverage and allow use of the particular site for the new system. The proposed countywide 700 MHz simulcast alternative allows a seamless transition between the old and the new system with the best value. While trunking creates advantage for large numbers of users, the EDACS system only designated 2 primary groups for police dispatch in Tazewell County. Given that all EDACS radios will require replacement in the process, the alternative can allow a future migration to trunking should it be required.

The multiple Tazewell County fire radio systems are steeped in tradition but lack basic utility in the consolidated environment. The fire departments will benefit more than the police to have countywide coverage. Similar to the EDACS replacement project, engineering of antenna sites for coverage is the initial part of the process. Second is the frequency coordination which will identify the use of particular frequencies for the system so as not to cause interference. Unlike the 700 MHz police initiative, the use of the VHF in analog mode will not require replacement of radios, only re-programming.

Each of the above projects are major initiatives requiring definition, preparation of specifications or a Request for Proposal document as well as review of vendor submitted bids and proposals. Furthermore, funding sources must be in place to proceed. It should be recognized that all are essential to the efficient and continued reliable operation of the 9-1-1 call taking and dispatch system. Some of the initiatives, particularly the radio system upgrades may result in an operational cost reduction. Using the intervals shown in the table above, the following list shows suggested start and finish dates for the initiatives to meet mandates and goals discussed. Goals include having an ETSB funding reserve in place.

<i>Initiative Start-Finish Date Chart</i>		
Initiative	Start	Finish
9-1-1 Telephone System Replacement	07/01/19	07/01/20
Radio Console Furniture Replacement	07/01/19	07/01/20
Radio Control Console Replacement	07/01/19	07/01/20
Police Radio System Replacement	01/01/19	07/01/20
Fire Radio System Upgrade	03/01/19	07/01/20

In several cases, implementing one or more of the major initiatives may have a positive cost impact on another. In addition, the radio system initiatives may reduce PSAP operating costs.

Cutover Plan

Several cutover dates are required and several moves of PSAP based 9-1-1 equipment must be choreographed. The first task to be accomplished is the installation of radio console control equipment and configuration of the 4th dispatch console at the East Peoria PSAP. This allows East Peoria to serve as a more robust backup to Pekin should those services be necessary during the consolidation period. Ragan Communications has the East Peoria console equipment to be installed in storage and will install it when required.

In addition to the East Peoria upgrade, certain radio and 9-1-1 telephone upgrades are made to the Pekin PSAP to allow communications with the agencies otherwise dispatched by the Washington and Morton PSAPs and increase the number of 9-1-1 trunks for wireless calls. In addition, a construction and remodeling is done at Pekin to prepare for console positioning, harden the entryway and provide for a different entry for persons other than staff.

It is assumed that during this period the old radio facilities in Morton will be replaced by new facilities on a new or existing tower on the grounds of the Morton Police Department. This will simplify radio control management at Pekin.

The initial 9-1-1 cutover is the decommissioning of the Washington PSAP. This is initiated by Centurylink reconfiguring the 9-1-1 trunk assignments from Washington to Pekin and the Morton assignment of using Washington as a backup instead reverts to Pekin. Washington radio dispatch moves to Pekin.

The 9-1-1 telephone and console equipment is then removed from Washington. The console systems are installed in Pekin which now has full capability of county-wide dispatch and 8 built-out console positions. Certain 9-1-1 telephone components from Washington are installed in Pekin to bring the 9-1-1 wireless trunk count to the planned level. It should be noted that in the interim period when Washington is being decommissioned and 9-1-1 electronics transferred, if Pekin's wireless trunks busy-out, the calls will go to East Peoria which can directly enter the incident into the CAD system.

Following the successful implementation of the transfer of Washington, the Morton 9-1-1 trunks are re-assigned to Pekin. Because those trunks are now received in Pekin, any overflow calls go to East Peoria. Morton dispatch is moved to Pekin during the period of Morton Construction.

During the construction in Morton, the 3rd 9-1-1 call-taker equipment from Washington is installed and the decommissioned 9-1-1 trunks tested. Radio equipment is installed in Morton and at the new radio tower location to control radios countywide. After the construction in Morton is complete, the 2 existing console positions are tested as ready for use with the 3rd stand-alone 9-1-1 telephone. Centurylink reassigns the prior Morton and Washington 9-1-1 assignments to Morton along with increasing the trunk count. Morton is then staffed with 2 positions, potentially with a call taker during busy periods, answering 9-1-1 calls for Morton and Washington.

For the final cutover, Centurylink re-assigns the East Peoria 9-1-1 trunks to Morton and East Peoria is decommissioned. Dispatch is moved to Morton which has 2 radio consoles plus a call-taking position. East Peoria's 9-1-1 equipment is moved to Morton including the console furniture. The installation of console furniture during live operations has been done at many 9-1-1 centers without disrupting ongoing services. Upon completion, Morton has 6 full function consoles and 1 additional call taking position, sufficient for Pekin backup purposes if required.

East Peoria dispatch and the 9-1-1 trunk assignments may consider a temporary move to Pekin during the Morton console upgrade without significant impact. Decisions should be made by the Governing Board, the ETSB and the Operations Board as to whether or not it is necessary or desirable based on minimum staffing requirements. It is anticipated that the changeover to NG911 will require the purchase of new console furniture and possible radio control electronics. When that project is accomplished, Morton will be upgraded to the full 8 console positions.

SCHEDULE

The implementation schedule to complete consolidation can be forward or backward looking. As a matter of compliance, under this plan the Tazewell County ETSB achieves 2-PSAP consolidation on June 1st of 2018 when the Morton PSAP closes for construction. Although, there is still significant work and reassignment of 9-1-1 telephone lines subsequent to that date which would concern the State 9-1-1 Administrator. The schedule on the following page is forward looking based upon the stakeholder agencies adopting the TC³ consolidation agreement in a timely manner.

<i>Consolidation Implementation Process Schedule</i>		
Task or Initiative	Start	Complete
Consolidation Plan Submitted and Approved	07/15/17	08/15/17
TC3 Agreement Reviewed, Revised and Ratified	06/16/17	10/01/17
Morton Radio Facilities Moved to PD Location	07/15/17	04/01/18
Morton Facility Engineering and Contractor Selection	07/15/17	04/01/18
Pekin CAD Backup Commissioned	07/15/17	09/15/17
TC3 Board of Directors Named & Seated	10/01/17	10/15/17
TC3 Director Hired	10/15/17	01/01/18
Pekin PSAP Remodeling	10/15/17	02/01/18
TC3 Administrative Staff Hired	02/01/18	04/30/18
TC3 Telecommunications Staff Hired	02/01/18	04/30/18
Pekin PSAP 9-1-1 & Radio Upgraded & Tested	02/01/18	03/01/18
East Peoria 4th Position Upgrade	02/01/18	03/01/18
Washington 9-1-1 ESNs Assigned to Pekin - Move	04/30/18	04/30/18
Morton Backup ESNs Assigned To East Peoria	04/30/18	04/30/18
Washington PSAP Decommissioned	05/15/18	05/30/18
Pekin PSAP Console Installation	05/15/18	05/30/18
Morton ESNs Assigned To Pekin - Move	06/01/18	06/01/18
Morton PSAP Construction	06/15/18	04/15/19
Morton PSAP Equipment Upgrade	04/15/19	05/15/19
Morton & Washington ESNs Assigned to Morton - Move	06/01/19	06/01/19
East Peoria ESNs Assigned to Morton Backup to Pekin	07/01/19	07/01/19
East Peoria PSAP Decommissioned - Eqmt to Morton	08/01/19	08/01/19
East Peoria Moves to Morton or Temporarily to Pekin (TBD)	08/01/19	08/01/19

ATTACHMENTS

Proposed Intergovernmental Agreement

INTERGOVERNMENTAL AGREEMENT

THIS INTERGOVERNMENTAL AGREEMENT ("Agreement") is made and entered into on or as of this 27th day of September, 2017, by and between the City of Pekin, an Illinois municipal corporation ("Pekin"), the City of East Peoria, an Illinois municipal corporation ("East Peoria"), the City of Washington, an Illinois municipal corporation ("Washington"), and the Village of Morton, an Illinois municipal corporation ("Morton"), all located in Tazewell County, Illinois, (collectively the "Municipalities"), and Tazewell County ("County"), the Tazewell County Sheriff ("Sheriff") (collectively the "Member Agencies") and the Tazewell County Emergency Telephone System Board ("ETSB"), an Illinois governmental body authorized under the Illinois Emergency Telephone System Act, 50 ILCS 750.01.

WHEREAS, Article VII, §10 of the Illinois Constitution authorizes local governmental units to enter into agreements with one another to obtain or share services and to exercise, combine, or transfer any power or function, in any manner not prohibited by law or by ordinance; and

WHEREAS, the Illinois Intergovernmental Cooperation Act, 5 ILCS 220/1 et seq., provides that any power or powers, privileges, functions, or authority exercised or which may be exercised by a unit of local government may be exercised and enjoyed jointly with any other unit of local government; and

WHEREAS, the ETSB authorizes the delivery of 9-1-1 calls to Public Safety Answering Points ("PSAPs"); and

WHEREAS, the State of Illinois passed Public Act 99-0006 on June 29, 2015, requiring all counties with populations of less than 250,000 that have a single Emergency Telephone System Board and more than two public safety answering points ("PSAPs"), to reduce the number of PSAPs by at least 50% or to two (2) PSAPs, whichever is greater; and

WHEREAS, Tazewell County has a population of less than 250,000 and a single Emergency Telephone System Board; and

WHEREAS, there are currently four (4) PSAPs in Tazewell County having authority to and providing 9-1-1 telephone call taking and dispatch services to public safety agencies which respond to the public's need for assistance and the maintenance of law and order; and

WHEREAS, Public Act 99-0006 requires that the ETSB complete the consolidation of PSAPs to two (2) prior to July 1, 2017; and

WHEREAS, the Illinois Office of the Statewide 9-1-1 Administrator and the State of Illinois Statewide 9-1-1 Advisory Board have granted the ETSB an extension of time until July 1, 2019 to consolidate to two (2) PSAPs; and

WHEREAS, the Tazewell/Pekin Consolidated Communications Center ("T/P CCC") is a currently existing intergovernmental agency created by the County of Tazewell and the City of Pekin which operates a PSAP located in Pekin, Illinois; and

WHEREAS, the remaining three (3) existing PSAPs, are owned and operated by the City of East Peoria, the Village of Morton, and the City of Washington and are located in East Peoria, Morton and Washington, respectively; and

WHEREAS, the parties hereto have determined that it is in the best interest of each party to this Agreement and the public health, safety and welfare of persons and property within each Municipality and within the County to enter into an agreement to consolidate the number of PSAPs and to establish that two (2) PSAPs shall serve all persons residing within Tazewell County; and

WHEREAS, the parties agree that the two (2) remaining PSAPs would be best served by one organizational structure governing both PSAPs; and

WHEREAS, this Agreement hereby creates an intergovernmental agency known as Tazewell County Consolidated Communications ("TC³"), with one Board of Directors to oversee the operations of the two (2) PSAPs; and

WHEREAS, the parties agree that it is in the public interest that T/P CCC be dissolved pursuant to its intergovernmental agreement such that all assets, duties, titles and obligations of the currently existing not-for-profit corporation known as the Tazewell/Pekin Consolidated Communication Center be transferred to Tazewell County and the City of Pekin; and

WHEREAS, the parties agree that it is in the public interest that this Agreement be executed for the purpose of defining the powers, obligations, and working structure of TC³ in order to fulfill the obligations of the ETSB to provide emergency telephone answering dispatch and related services for the residents of Tazewell County ("System").

NOW, THEREFORE, in consideration of the foregoing recitals and to the extent permitted by law, the Member Agencies agree as follows:

1. FORMATION & MODIFICATIONS.

1.1 T/P CCC. The County and the City of Pekin shall, no later than thirty (30) days after consolidation of the four (4) PSAPs to two (2) PSAPs, cause the not-for profit corporation known as the Tazewell/Pekin Consolidated Communication Center to be dissolved and shall rescind and/or modify the Bylaws, Articles of Incorporation, Joint Public Safety Communications System Agreement executed by the County and City of Pekin, and any other documents as may be necessary to effectuate the changes required by this Agreement.

1.2 TC³. Tazewell County and the City of Pekin hereby agree to accept all assets, duties, titles and obligations of the currently existing not-for-profit corporation known as the Tazewell/Pekin Consolidated Communication Center. The Member Agencies shall operate the existing PSAPs in coordination with the ETSB, and shall diligently provide for the consolidation of the four (4) current PSAPs to only two (2) PSAPs by or before the July 1, 2019 deadline.

1.3 TC NORTH. The parties shall cause for the installation, maintenance, and operation of a Tazewell County Consolidated Communications PSAP to be housed within and adjacent to the facilities of the Morton Police Department, named "TC North". The Village of Morton shall, at its cost, provide suitable space and utilities in the Police Department building and other ground or facility space as required to locate required communications technology and equipment to provide PSAP services and shall be entitled to reasonable rent from TC³ for

such space in an amount to be mutually agreed upon by the TC³ Governance Board and the Village of Morton. Rental compensation shall be rendered to Morton either in the form of monetary payment or credit against fees due to TC³, and shall be afforded to the Village of Morton during the term such space(s) are used by TC³ in providing PSAP services. In the event the TC³ Governance Board and the Village of Morton are unable to reach an agreement as to the rental amount, said amount shall be determined as follows: the TC³ Governance Board and the Village of Morton shall each appoint an independent real estate appraiser with an MAI designation and with at least ten (10) years' commercial real estate appraisal experience in the Tazewell County real estate market. The two appraisers shall then, within ten (10) days after their designation, select an independent third appraiser with like qualifications. Within twenty (20) days after the selection of the third appraiser, a majority of the appraisers shall determine the rental rate. If a majority of the appraisers is unable to agree upon the rental rate by such deadline, then the two (2) closest appraisals shall be averaged and the average shall be the rental rate. The TC³ Governance Board and the Village of Morton shall each bear the entire cost of the appraiser selected by it and shall share equally the cost of the third appraiser.

1.4 TC SOUTH. The parties shall cause for the installation, maintenance, and continued operation of an existing Tazewell County Consolidated Communications PSAP currently housed within and adjacent to the facilities owned by the City of Pekin commonly known as the Tazewell/Pekin Consolidated Communication Center and shall hereinafter be known as "TC South". The City of Pekin shall, at its cost, continue to provide suitable space and utilities in the building and other ground or facility space as required to locate required communications technology and equipment to provide PSAP services and shall be entitled to reasonable rent from TC³ for such space in an amount to be determined by the TC³ Governance Board. Rental compensation shall be rendered to the City of Pekin in the form of monetary payment or credit against fees due to TC³, and shall be afforded to the City of Pekin during the term such space(s) are used by TC³ in providing PSAP services.

1.5 PARTICIPATING AGENCIES The parties recognize that the provision of PSAP services is critical to the citizens of the County and such services are shared between the public and the first response agencies requiring communications. Each agency receiving dispatch services from a TC³ PSAP shall execute an agreement acknowledging the official relationship and the responsibility to pay the costs of the service. This agreement shall be in addition to any other official or required agreements the agency must execute in order to comply with the Illinois Emergency Telephone System Act. The cost to provide said agency communications is proportional to the number of activities of the particular agency as officially recorded by TC³. The operating costs to provide PSAP services shall be assessed among the Member Agencies and participating agencies ("Participating Agencies") in a manner reflecting the quantity of services ("Funding Formula") rendered as determined by the Board of Directors. In recognition of the financial support provided to TC³, Participant Agencies will be afforded representation on the Governance, Board along with the Member Agencies and the ETSB, as shown in the Bylaws of TC³.

In the event a Member Agency or Participating Agency fails to pay its proportionate share of costs to TC³, TC³ may withhold any or all services to that Agency, and/or take appropriate legal action to collect such payments.

2. **CREATION & PURPOSE.** The Member Agencies agree to take all appropriate and necessary steps to create "TC³". TC³ shall be an intergovernmental cooperative agency, which, with the

concurrence of all Member Agencies, may be incorporated as a not-for-profit corporation. The purpose of TC3 shall be for the operation and maintenance of a centralized, combined emergency services dispatch and communication system, for the purpose of providing facilities, equipment, personnel, software and hardware, data processing and all other services necessary or incidental to: (1) the provision of emergency and/or municipal dispatch and communications services to its participants; (2) the implementation and enforcement of this Agreement; and (3) to provide a forum for discussion, study, development, and implementation of recommendations regarding public safety communications and criminal justice within the County.

TC³ shall operate and be governed in the manner described in the By-Laws attached hereto as **Exhibit B**, which will be adopted by the Board and are incorporated into this Agreement by reference.

3. **POWERS.** In furtherance of its purposes, TC³ shall have the power:

- 3.1 To acquire, construct, receive, own, manage, lease and sell real property, personal property and intangible property;
- 3.2 To operate and maintain various systems, including but not limited to, 9-1-1 telephone answering, computer aided dispatch, radio communications, mobile data, voice recording and related facilities and support systems, collectively the "System";
- 3.3 To enter into contract with public and private entities;
- 3.4 To sue and be sued;
- 3.5 To employ and terminate personnel, with or without cause, provide employee benefits and contract for personnel and services with public and private entities;
- 3.6 To incur indebtedness and to issue bonds, notes or other evidence thereof through one or more of the Municipalities or County unless and until TC³ has such power under applicable law;
- 3.7 To establish and collect fees and assessments from Participants in accordance with the Funding Formula;
- 3.8 To insure redundant, competent and uniform operation of TC North and TC South;
- 3.9 To seek economies of scale;
- 3.10 To establish bylaws, policies, guidelines or regulations to carry out its powers and responsibilities;
- 3.11 To exercise all other powers that are within the statutory authority of and may be exercised by the Municipalities and County with respect to the System; and

3.12 To obtain appropriate insurance coverages for its operations, including liability and worker compensation insurance, and to provide that each Member Agency is an additional insured.

4. **SYSTEM ASSETS.** TC³ may acquire, construct, receive, own, manage, lease or sell System assets and other assets. A Municipality may transfer to TC³ its title to, and operational control of, communication assets which then become part of the System. This Agreement does not vest in TC³ any authority with respect to other facilities or assets of the Municipalities or County.
5. **PROVISION OF SERVICES.** TC³ shall be responsible for providing 24-hour 9-1-1 call taking, dispatch for law enforcement, fire services, medical services, public works, emergency management or any other communication services necessary for the operation of the System pursuant to this Agreement to all persons, areas and Agencies residing within Tazewell County. TC³ may provide such services to areas and Agencies outside of the boundaries of Tazewell County provided the provision of such services is recognized through agreement, required by statute, or otherwise reasonably necessary by the nature of the event.
6. **ADMINISTRATION.** A Board of Directors shall govern TC³ as described in the Bylaws and shall have the powers set forth in the Bylaws.
7. **BUDGET.** The fiscal year of TC³ shall begin May 1st and end April 30th. An annual budget shall be prepared by the Board of Directors and submitted to the Member Agencies so served in accordance with the Bylaws.
8. **FINANCES.** It is anticipated that funding for TC³ be provided primarily from Participant fees levied in accordance by the Funding Formula which is determined and approved in Section 8.1. Additional revenue for unanticipated expense or particular system improvement may be provided by 9-1-1 surcharge monies from the ETSB, grants, contracts, and by a Participant Agency or Agencies through a Participant Special Assessment, which may be assessed only if approved in 8.2.

8.1 FUNDING FORMULA. The initial Funding Formula for Participant Agencies, attached hereto and incorporated herein as **Exhibit A**, may be amended on a yearly basis, to assure fair and equitable funding of the System. Any such proposed amendment to the Funding Formula shall be sent to all Participating Agencies at least 30 days prior to the Board of Directors meeting at which the proposal is to be considered and Participant Agencies given an opportunity to submit comments or be heard. If the Funding Formula is not ratified, the current Funding Formula shall remain in effect.

The parties recognize the need to establish and provide for funding for TC³ in a fair and equitable manner during the process of consolidation. The parties agree to engage in good faith negotiations as may be necessary to reach agreement as to the manner of funding TC³ during the consolidation process.

8.2 PARTICIPANT SPECIAL ASSESSMENT. Participant Special Assessments may be assessed for major repairs or replacement of equipment or components thereof, including but not limited to software, which are required for the operation of TC³ and for the fulfillment of the purposes of TC³, which are not identified in the current year's budget, and which such repairs or replacement exceed \$25,000.00. Upon determination by the Board that a Participant Special Assessment is required, all Participants shall be notified of the need and amount of the particular assessment not less than 30 days prior to the

Board of Directors voting on the Participant Special Assessment and it shall require approval by no less than a two-thirds vote of the Board and ratification by motion or resolution evidenced in writing of not less than a majority of the all Participant Agencies within 30 days after the approval by the Board. The Board of TC³ may determine that a Special Assessment is more appropriately borne by only certain Participating Agencies if the Special Assessment is of value primarily to those Agencies.

8.3 SPECIAL SYSTEM ADDITIONS OR IMPROVEMENTS. A Participant Agency or combination of Agencies may make a request to the Board of Directors to modify, improve or make additions to system technology which will benefit and be paid for by the requesting agency(ies). The Board of Directors will examine such request and determine or verify the cost of the proposal and whether or not it will have a positive effect on operations. The Board of Directors shall not unreasonably withhold approval for such request and the requested modifications, improvements, or additions shall be undertaken by the TC³ organization and become part of the System thereof. The requesting agency(ies) will pay the TC³ organization for the incurred expense not later than 30 days after the request is completed.

9. **AMENDMENTS.** Any Member Agency may request changes to this Agreement. Amendments to this Agreement may be made only by written agreement of all Member Agencies.
10. **LIABILITY.** Except as may be otherwise provided by individual contracts or by law, the Member Agencies shall not be liable for the debts and liabilities of TC³.
11. **GOVERNING LAW.** This agreement shall be subject to and governed by the laws of the State of Illinois.
12. **SEVERABILITY.** In the event that any provision of this agreement is rendered invalid by the decision of any court or by the enactment of any law, such provision of this agreement shall be deemed to have never been included herein and the balance of the agreement shall continue in effect.
13. **NOTICES.** Any notice required to be given by or on behalf of either party to the other shall be deemed given when mailed by registered or certified mail, return receipt requested as follows or to the last known address of either party:

If to Pekin: Pekin City Police Department
 111 S. Capitol St., # 100
 Pekin, IL 61554
 (309) 346-3132

If to East Peoria: East Peoria Police Department
 201 W Washington St
 East Peoria, IL 61611
 (309) 698-4700

If to Washington: Washington Police Department
 115 W. Jefferson
 Washington, IL 61571
 (309) 444-2312

If to Morton: Morton Police Department
375 W. Birchwood
Morton, IL 61550
(309) 266-6666

If to the County: Tazewell County Sheriff's Office
101 S. Capitol Street
Pekin, IL 61554
(309) 477-2250

If to the Sheriff: Tazewell County Sheriff's Office
101 S. Capitol Street
Pekin, IL 61554
(309) 477-2250

If to the ETSB: Tazewell County Emergency Telephone System Board
101 S. Capitol Street
Pekin, IL 61554
(309) 478-5796

14. **TERM OF AGREEMENT.** This Agreement shall be in full force and effect from the date affixed to the last Member Agency to execute this Agreement and shall remain in effect until April 30, 2030. Unless terminated by a majority vote of the parties hereto, the agreement will renew for subsequent periods of five (5) years beginning May 1, 2030.

Notwithstanding the above, a Member Agency may withdraw from this Agreement in the manner described in the attached By-Laws.


15. **COMPLETE AGREEMENT.** Except as otherwise expressly provided herein, this Agreement supersedes all prior agreements, negotiations and discussions relative to the subject matter hereof and fully integrates the agreement of the parties.
16. **PARAGRAPH HEADINGS.** Paragraph headings and references are for the convenience of the parties and are not intended to limit, vary, define or expand the terms and provisions contained in this Agreement and shall not be used to interpret or construe the terms and provisions of this Agreement.
17. **COUNTERPARTS.** This agreement may be executed in any number of counterparts, each of which when executed and delivered shall constitute a duplicate original, but all counterparts together shall constitute a single agreement.

--signature pages follow--

CITY OF PEKIN

By

Its

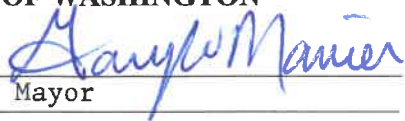


Mayor

Date

September 25, 2017

CITY OF WASHINGTON

By 
Its Mayor

Date 9-25-2017

CITY OF EAST PEORIA

By D. L. W. Mungie
Its Mayor

Date September 28th, 2017

VILLAGE OF MORTON

By Jeffrey L. Kaufman
Its President

Date 9/26/17



TAZEWELL COUNTY SHERIFF

By

Its

Robert M. Huston
SHERIFF

Date

09-27-17

TAZEWELL COUNTY

By

Its


County Board Chairman

Date

09-27-17

TAZEWELL COUNTY EMERGENCY
TELEPHONE SYSTEM BOARD

By William
Its CHAIRMAN

Date 20 September 2017

Exhibit A- Funding Formula

Agency Fee Comparison	Share
ADVANCED MEDICAL TRANSPORT	4.5%
ARMINGTON FPD	0.0%
ARMINGTON POLICE DEPT	0.0%
CREVE COUER FIRE DEPT	0.8%
CREVE COUER POLICE DEPT	4.7%
CINCINNATI FPD	0.3%
DEER CREEK FPD	0.1%
DEER CREEK POLICE DEPT	0.2%
DELAVAN FPD	0.3%
DELAVAN POLICE DEPT	1.1%
EAST PEORIA FIRE DEPT	3.6%
EAST PEORIA POLICE DEPT	17.3%
FONDULAC PARK DISTRICT POLICE	0.7%
FORMAN FPD	0.1%
GERMANTOWN HILLS FPD	0.0%
GREEN VALLEY FPD	0.1%
GREEN VALLEY POLICE DEPT	0.2%
HOPEDALE FPD	0.1%
HOPEDALE POLICE DEPT	0.3%
MACKINAW FPD	0.2%
MACKINAW POLICE DEPT	0.6%
MORTON FIRE DEPT	2.5%
MORTON POLICE DEPT	7.3%
MARQUETTE HEIGHTS FIRE DEPT	0.2%
MARQUETTE HEIGHTS POLICE DEPT	1.9%
MINIER FIRE DEPT	0.2%
MINIER POLICE DEPT	0.5%
NORTH PEKIN FIRE DEPT	0.2%
NORTH PEKIN POLICE DEPT	2.4%
NORTHERN TAZEVELL FPD	1.0%
PEKIN FIRE DEPT	5.2%
PEKIN POLICE DEPT	20.8%
PEKIN PARK DISTRICT POLICE	0.7%
SPRING BAY FPD	0.1%
SCHAEFFERVILLE FPD	0.3%
SOUTH PEKIN FIRE DEPT	0.3%
SOUTH PEKIN POLICE DEPT	0.8%
TAZEVELL CO ANIMAL CONTROL	0.9%
TAZEVELL CO COURT SERVICES	0.2%
TAZEVELL COUNTY SHERIFFS OFFICE	9.7%
TREMONT FPD/RESCUE 702	0.3%
TREMONT POLICE DEPT	0.8%
WASHINGTON FIRE DEPT	1.3%
WASHINGTON POLICE DEPT	7.1%
TOTALS:	100.0%