Regional 9-1-1 Consolidation

MissionCriticalPartners
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Regional 9-1-1 Consortium
Concept of Operations and Implementation Plan

PREPARED DECEMBER 6, 2019 FOR
THE CONSORTIUM IN LAKE COUNTY, ILLINOIS

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Executive Summary

Twenty-one partner agencies—including eight public safety answering points (PSAPs) and one dispatch agency—agreed to become early adopters and enter into an intergovernmental agreement (IGA). The partner agencies formed a consortium to develop an implementation plan for the next phase of potential consolidation of 9-1-1 services in their footprint of Lake County, Illinois. The planning project is supported by a dedicated project manager retained by the Regional 9-1-1 Planning Consortium (Consortium) to lead the planning process. The project manager works directly with policy and operations committees, which are supported by eight workgroups, and a hired consultant team.

The eight PSAPs in the Consortium maintain different IGAs to provide service to the municipalities and agencies that they serve. The PSAPs are affiliated with ten different Emergency Telephone Systems Boards (ETSBs) representing a population of over half a million people. Collectively, the eight PSAPs processed 261,989 9-1-1 calls, on average, in 2016-2017. The PSAPs handled an average of 861,866 law enforcement calls for service, 69,809 fire and emergency medical services (EMS) calls for service, and 37,369 other calls for service—totaling 969,044 calls for service in the same time period.

In almost all PSAPs, the telecommunicators perform non-core functions from an array of additional duties such as detention, alarm monitoring, non-emergency calls and administrative lobby duties. Since the dispatch arrangements in the current configuration are not based on contiguous boundaries, there are a high number of call transfers.

The efforts of the initial data gathering by the financial workgroup has estimated the expenses of operating the PSAPs in the consortium to be between $22 million and $26 million. Consortium surcharge revenues are estimated to be between $6 million and $7 million.

There are between 23 and 36 telecommunicators on duty in the consortium footprint at any given time, with a total of 121 full-time and 20 part-time telecommunicators. Most telecommunicators are represented by one of four different collective bargaining organizations. The average salary for telecommunicators in the consortium is $63,107.

All PSAPs in the consortium are a standalone public safety agency or are operated by a municipality or the county and collocated with another entity; the PSAPs have been in operation an average of 29 years.

There has been some commonality in selecting existing computer aided dispatch (CAD) system, mobile data system, and records management system (RMS) vendors over the years; however, there remain to be noticeable differences across the PSAPs. One best practice that has been implemented is the use of a CAD-to-CAD interface system that enables some base level of information sharing among the PSAPs. In late 2019, the Consortium hired a vendor to research and draft a request for proposal (RFP) for a potential countywide CAD, mobile, RMS, and jail management system (JMS) solution.

There is no common call handling platform in the Consortium—although several PSAPs use the Lake County ETSB-owned shared system. Other systems in use that are disparate–not shared or common

systems–include digital logging (recording) systems, geographic information systems (GIS), radio systems and Emergency Services Internet Protocol (IP) networks (ESInets).

The efforts of the planning team have included a thorough analysis of the current environment in relation to best practices, national standards, and comparisons to similar counties and PSAPs both regionally and across the country. A summary of this analysis highlights:

- The ancillary duties performed by PSAPs—although not a core function of 9-1-1—will require thoughtful solutions that partners are comfortable with in order to proceed with the core facets of 9-1-1 standardization or consolidation (whether virtual or physical).
- The elimination of gaps in boundaries and service areas can lead to reduced transfers, ultimately leading to a higher level of quality of service provided to 9-1-1 callers in the consortium.
- ETSBs are likely paying for duplicative services and equipment, and opportunities are missed for the creation of larger, shared systems.
- The current ETSB and governance environment promotes competition between the PSAPs, leading to services being dispatched solely due to cost, not the optimum operational location.

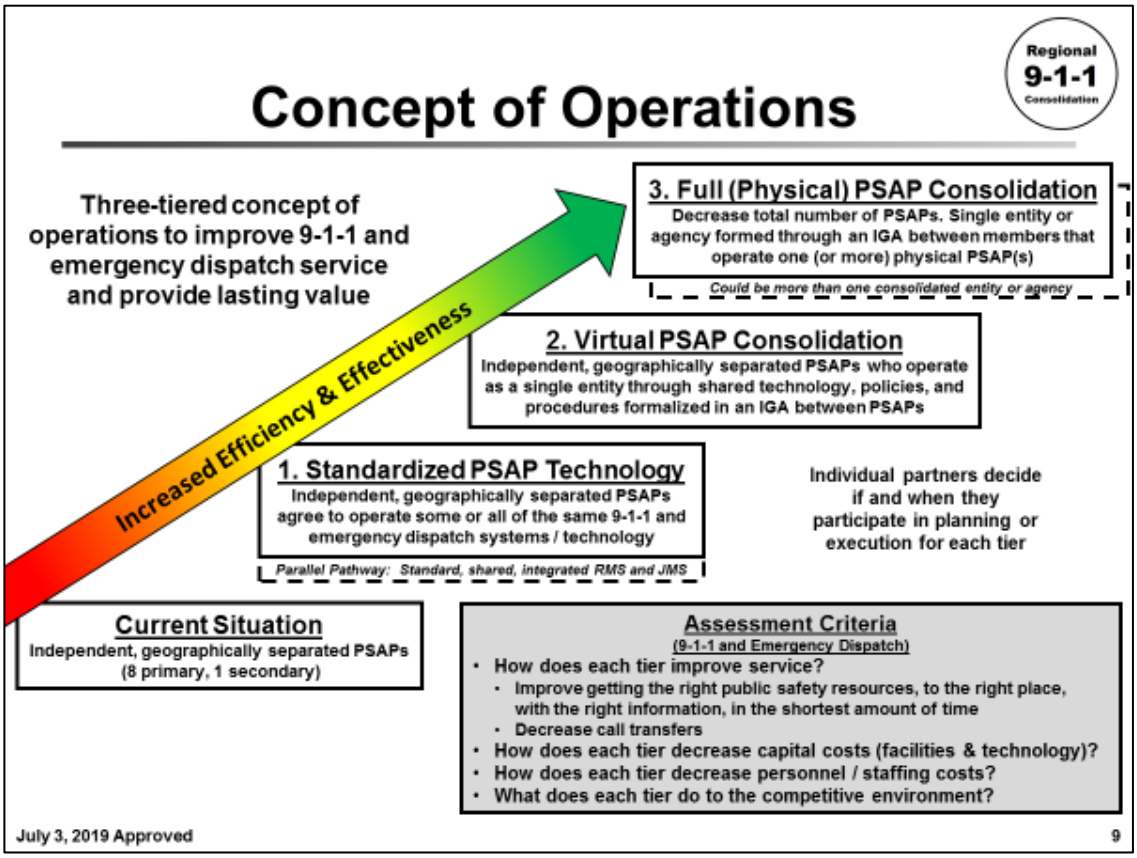
Staffing analyses were performed by the planning team, which recommended an on-duty complement across the consortium of 18 to 26 telecommunicators. Using this as a baseline for facility planning, the planning team agreed to use 26 physical workstations (consoles) in a consolidated operation. When combined with the current facility environment, it has been observed that many of the facilities have room for expansion; however, that room is limited and will require modification at each facility.

Regarding technology, relationships and collaboration that have begun by the Consortium through workgroups and this project can be leveraged to form the foundation for regional CAD governance. Entities with immediate needs for new systems, such as CAD, can serve as early adopters, which will allow the initial CAD governance group to be manageable.

Initial discussions among the partners, several concepts for decisions were proposed regarding planning horizons, assumptions, governance, facilities, operational focus, and technology. Based on feedback and partner concern from the Consortium, these options were reviewed, updated, and restructured. The planning team sought three specific decisions that will provide a framework for future planning.

Decision 1 – Three-Tiered Concept of Operations

The technology, operational procedures, and personnel workgroups recommend a three-tiered concept of operations to improve 9-1-1 and emergency dispatch services.



- Tier 1 – Standardized PSAP Technology – Independent, geographically separated PSAPs agree to operate some or all the same 9-1-1 and emergency dispatch systems / technology (parallel, coordinated path to standard shared RMS and JMS). The main focus of this tier is on technology.

- Tier 2 – Virtual PSAP Consolidation – Independent, geographically separated PSAPs that operate as a single entity through shared technology, policies, and procedures formalized in an IGA between PSAPs. The main focus of this tier is on governance, finance, operations, and technology.

- Tier 3 – Full (Physical) PSAP Consolidation – Decrease total number of PSAPs. Single entity or agency formed through an IGA between members that operate one (or more) physical PSAP(s). The main focus of this tier is on governance, finance, facilities, and personnel/staffing.

Each tier has its own decision-making structure and is mutually exclusive. Each individual partner can decide if and when they participate in planning and execution of each tier. While evaluating the impact, the planning team assessed the following:

- How does each tier improve service in relation to the Consortium's goals?
- How does each tier decrease capital costs?
- How does each tier decrease personnel, staffing, and operational costs?
- What does each tier do to reduce the competition exhibited in the current environment?

Decision 2 – Expansion of Technology Scope

The technology workgroup recommended an expansion of the scope of its efforts. The preferred option is to expand the mission to include coordinating efforts to move towards a shared, scalable ecosystem of enterprise public safety databases. This would lead to a shared CAD, RMS, and JMS; a single consortium-wide CAD by 2025; and a single, shared GIS database.

Although limited, another option would be to set a goal to place all participating PSAPs on the same CAD system by 2025.

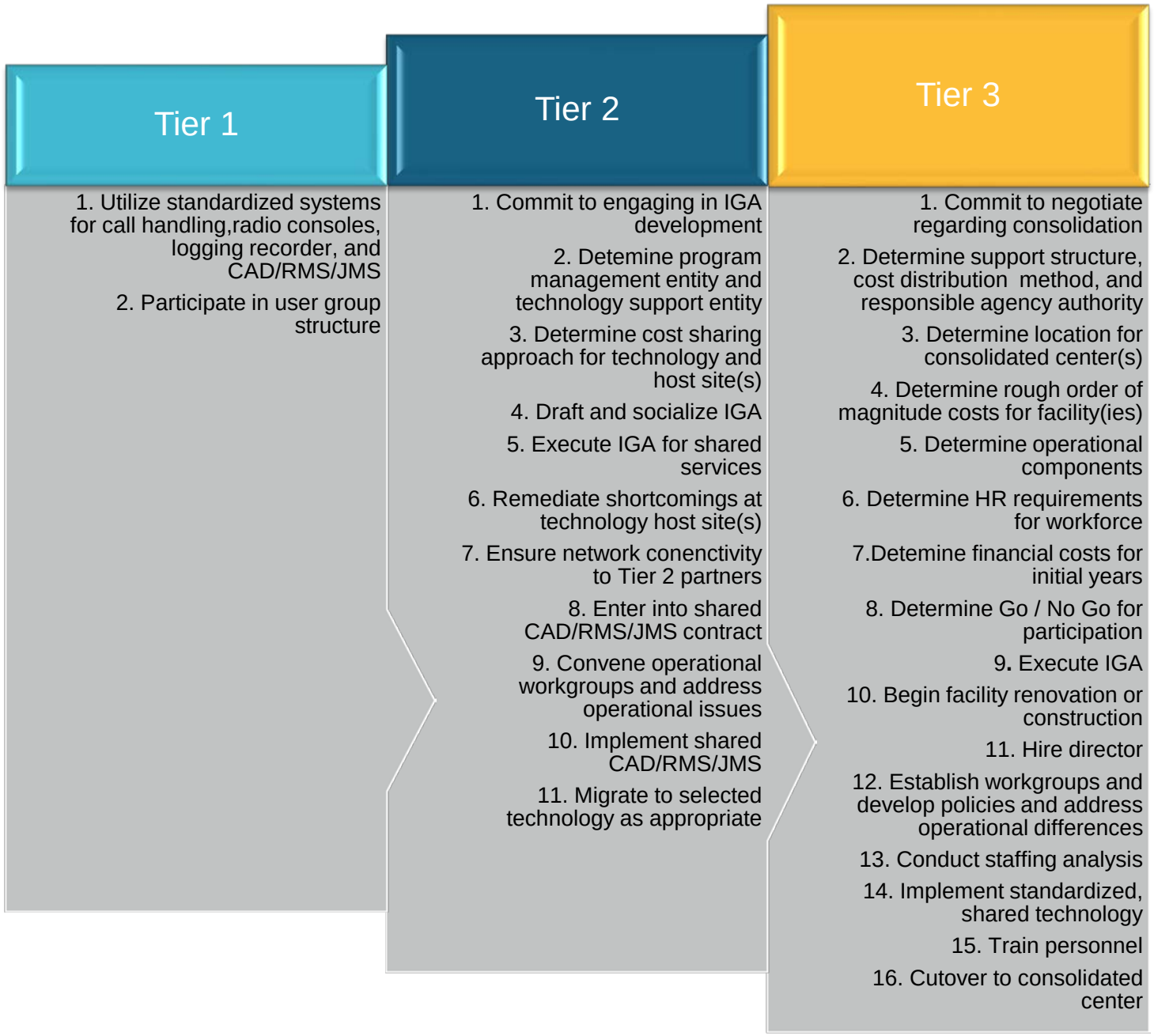
Decision 3 – Development and Release of CAD, Mobile, RMS, and JMS RFP

Since the analysis of the current environment uncovered several entities that have an immediate need to replace their CAD, mobile, RMS or JMS, the technology workgroup also recommended the approval of a consultant to support CAD, mobile, RMS, and JMS procurement.

It was recommended that the consultant research and draft the RFP for selection of a system vendor, and optionally support the selection process, contract negotiations, and project management during implementation. This project is to be funded by the Consortium, with additional funds provided by one or more partners.

Subsequently, an RFP was released for a consultant firm to support this procurement. As of the fall 2019, a CAD consultant has been selected for this project.

Detailed planning culminated in a final, executable implementation and migration plan. This detailed plan allows for a prompt start to implementation in 2020; although certain opportunities have arisen that will advance certain areas of focus earlier than 2020. The major steps for each tier are shown below.


Tier 1
1. Utilize standardized systems for call handling,radio consoles, logging recorder, and CAD/RMS/JMS
2. Participate in user group structure
Tier 2
1. Commit to engaging in IGA development
2. Detemine program management entity and technology support entity
3. Determine cost sharing approach for technology and host site(s)
4. Draft and socialize IGA
5. Execute IGA for shared services
6. Remediate shortcomings at technology host site(s)
7. Ensure network conenctivity to Tier 2 partners
8. Enter into shared CAD/RMS/JMS contract
9. Convene operational workgroups and address operational issues
10. Implement shared CAD/RMS/JMS
11. Migrate to selected technology as appropriate
Tier 3
1. Commit to negotiate regarding consolidation
2. Determine support structure, cost distribution method, and responsible agency authority
3. Determine location for consolidated center(s)
4. Determine rough order of magnitude costs for facility(ies)
5. Determine operational components
6. Determine HR requirements for workforce
7.Detemine financial costs for initial years
8. Determine Go / No Go for participation
9. Execute IGA
10. Begin facility renovation or construction
11. Hire director
12. Establish workgroups and develop policies and address operational differences
13. Conduct staffing analysis
14. Implement standardized, shared technology
15. Train personnel
16. Cutover to consolidated center

1 Background

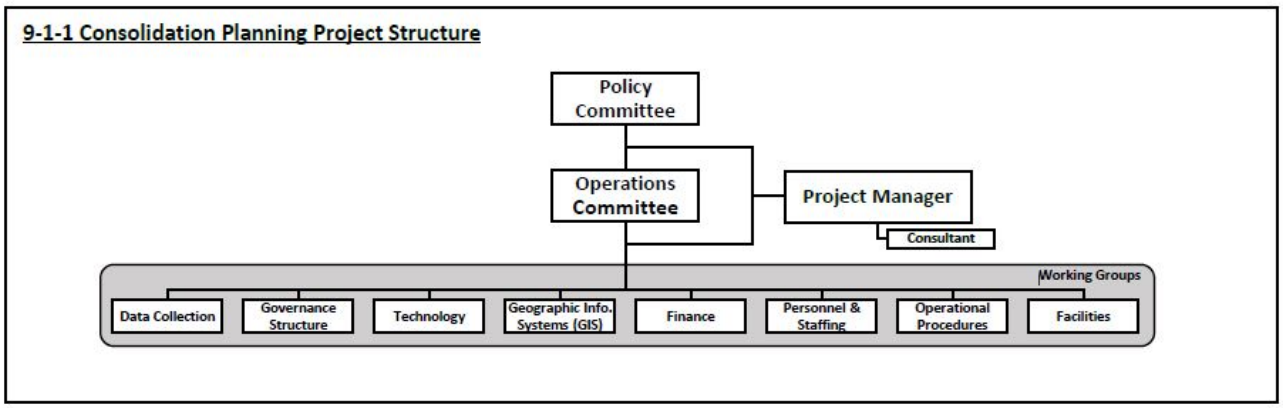
The Lake County Emergency Telephone System Board (LCETSB) commissioned an initial public safety answering point (PSAP) consolidation study in 2013. This was in response to Illinois Act 99-0006 (amended as 50 ILCS 750/15), which mandated consolidation of the state's PSAPs. It then was determined that further study was needed. A second study—commissioned in 2015 and completed in 2017—recommended approaches toward consolidation and potential benefits such as:

- Reductions in call transfers
- Staffing improvements to provide enhanced coverage for 24 hours a day, 7 days a week (24 x 7) operations
- More consistent and effective service delivery
- Greater opportunities for interagency response, backup, and data sharing
- Operational and capital cost savings

However, following these studies, many of the public safety agencies in Lake County still had unanswered questions, such as:

- What is the plan?
- What will be the governance structure?
- What funding model will be used?
- What will be the call volume and how many staff will be necessary to handle it?
- What technology platforms will be used?
- What will be the quantity, size, and locations of the PSAPs?
- What will be the policies and procedures?
- How will ancillary tasks such as prisoner detention and non-emergency call answering be handled in the new environment?

Twenty-one of those partner agencies—including eight PSAPs and one dispatch agency—agreed to become early adopters and enter into an intergovernmental agreement (IGA). The partner agencies formed the Regional 9-1-1 Planning Consortium (Consortium) to develop an implementation plan for the next phase of potential consolidation. The project is supported by a dedicated project manager retained by the Consortium to lead the planning process. The project manager works directly with the policy and operations committees, which are supported by the following workgroups:



The workgroups have collaborated since the fall of 2018 on different aspects of plan development. The project manager, through the data collection committee, contacted stakeholders and gathered PSAP and agency-specific information that was combined into a project data book. This information, combined with onsite stakeholder interviews and participation in committee and workgroup meetings, enabled Mission Critical Partners, LLC (MCP) to develop an overview of current operations and recommendations for a path to consolidation.

Detailed planning culminated in a final, executable implementation and migration plan.

2 Current Environment

The 21 participating partners that formed the Consortium represent a population of 590,935. This section provides a snapshot of the eight PSAPs' 9-1-1 call-handling and emergency response dispatching environment as it will look by the end of 2019 for the participating partners in Lake County.

2.1 Operations

The map below shows all PSAPs currently in Lake County.

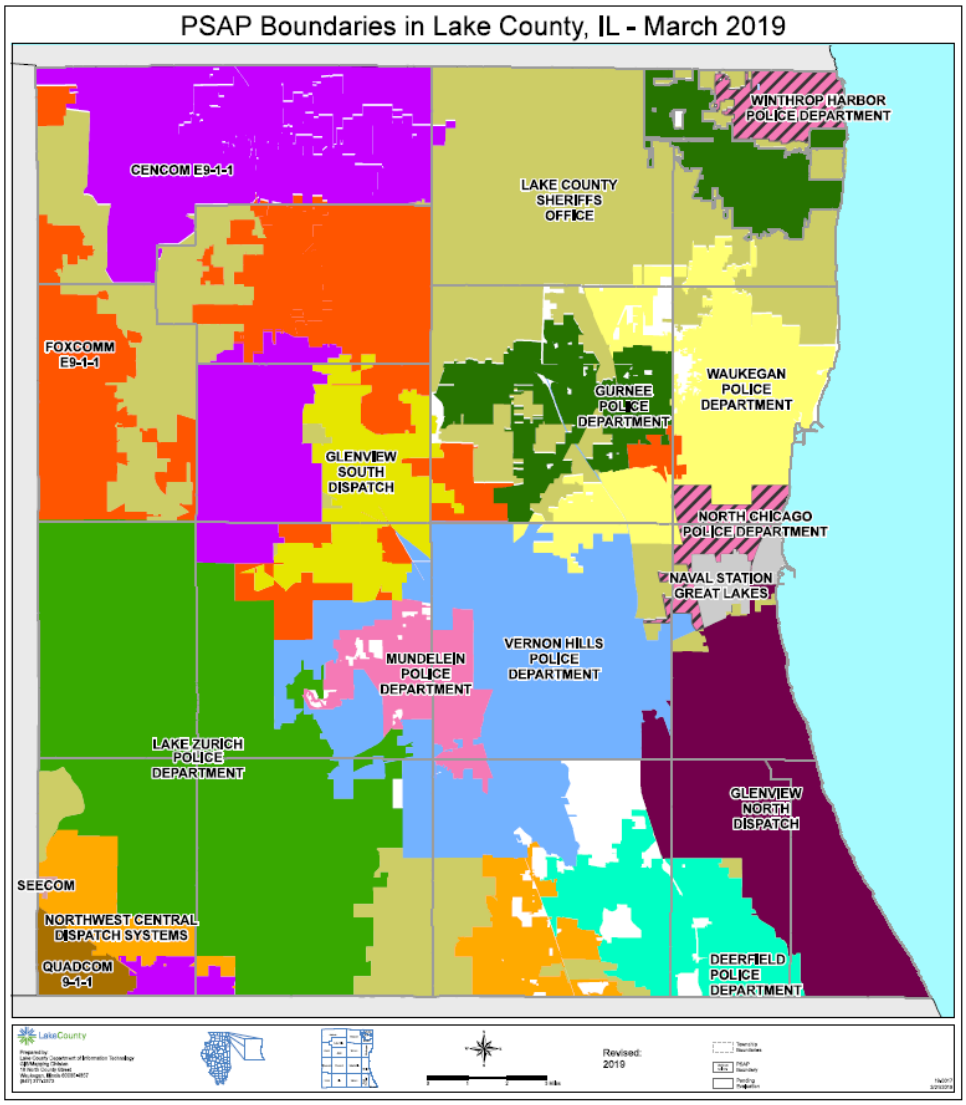


Figure 1: Lake County PSAP Boundaries

Emergency calls for the consolidation partners are answered by PSAPs, shown in the table below, across Lake County based on individual IGAs. There are 30 law enforcement and 18 fire/emergency medical services (EMS) agencies dispatched by the PSAPs. The City of North Chicago and the Village of Winthrop Harbor will be handled by the Mundelein PSAP by the end of 2019. The Countryside Fire Protection District (FPD) dispatch center is co-located with the Vernon Hills PSAP.

The table below shows the total number of combined 9-1-1 calls for participating PSAPs reported for 2016 and 2017.

Table 1: 9-1-1 Calls per PSAP (2016–2017)

PSAP	Average 9-1-1 Calls 2016-2017
CenCom E9-1-1	31,603
FoxComm (Fox Lake) E9-1-1	14,750
Gurnee 9-1-1	20,310
Lake County Sheriff's Office (LCSO) E9-1-1	65,649
Lake Zurich 9-1-1	16,845
Mundelein 9-1-1	7,805
Vernon Hills (and Countryside FPD)	24,178
Waukegan 9-1-1	66,601
North Chicago	14,248
Total	261,989

The table below represents a breakdown of calls for service by discipline as entered in the computer aided dispatch (CAD) system.

Table 2: Average Incidents by Discipline (2016–2017)

Discipline	Average Incidents 2016-2017
Law Enforcement	861,866
Fire/EMS	69,809
Other	37,369
Total	969,044

All PSAPs, except LCSO and Waukegan, provide emergency medical dispatch (EMD) for 9-1-1 EMS calls. Fire/EMS calls received by the LCSO PSAP are transferred to the appropriate PSAP or dispatch center, as they do not directly dispatch for any fire/EMS agencies. Waukegan uses a set of internal protocols.

Text-to-9-1-1 use is limited throughout Lake County. Only two participating PSAPs, CenCom and FoxComm, reported the ability to receive text calls.

The map below shows the current breakdown of fire/EMS dispatch within Lake County. This includes all of Lake County because dispatch boundaries do not equate to PSAP boundaries.

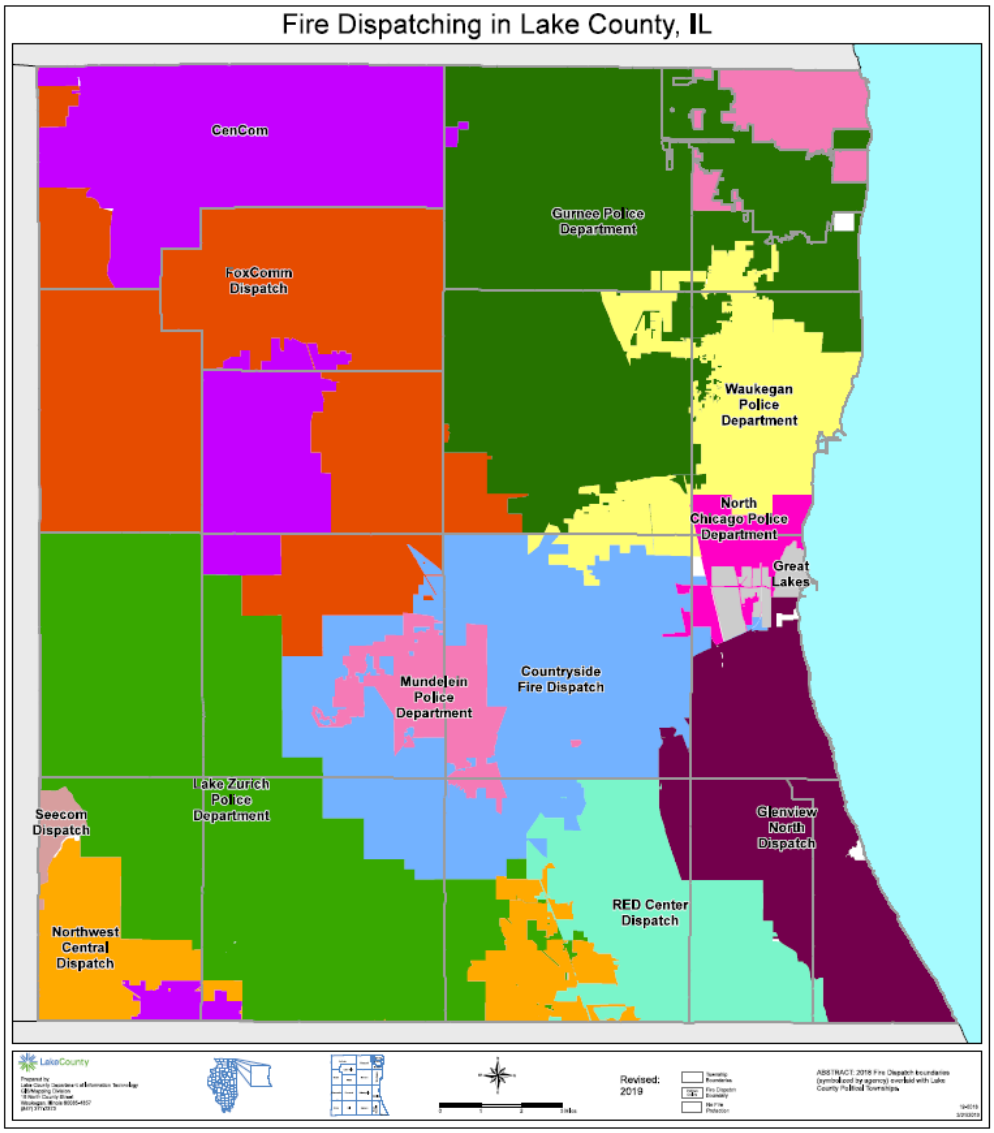


Figure 2: Lake County Fire/EMS Dispatch Boundaries

The map below shows the current breakdown of law enforcement dispatch within Lake County. This includes all of Lake County because dispatch boundaries do not equate to PSAP boundaries.

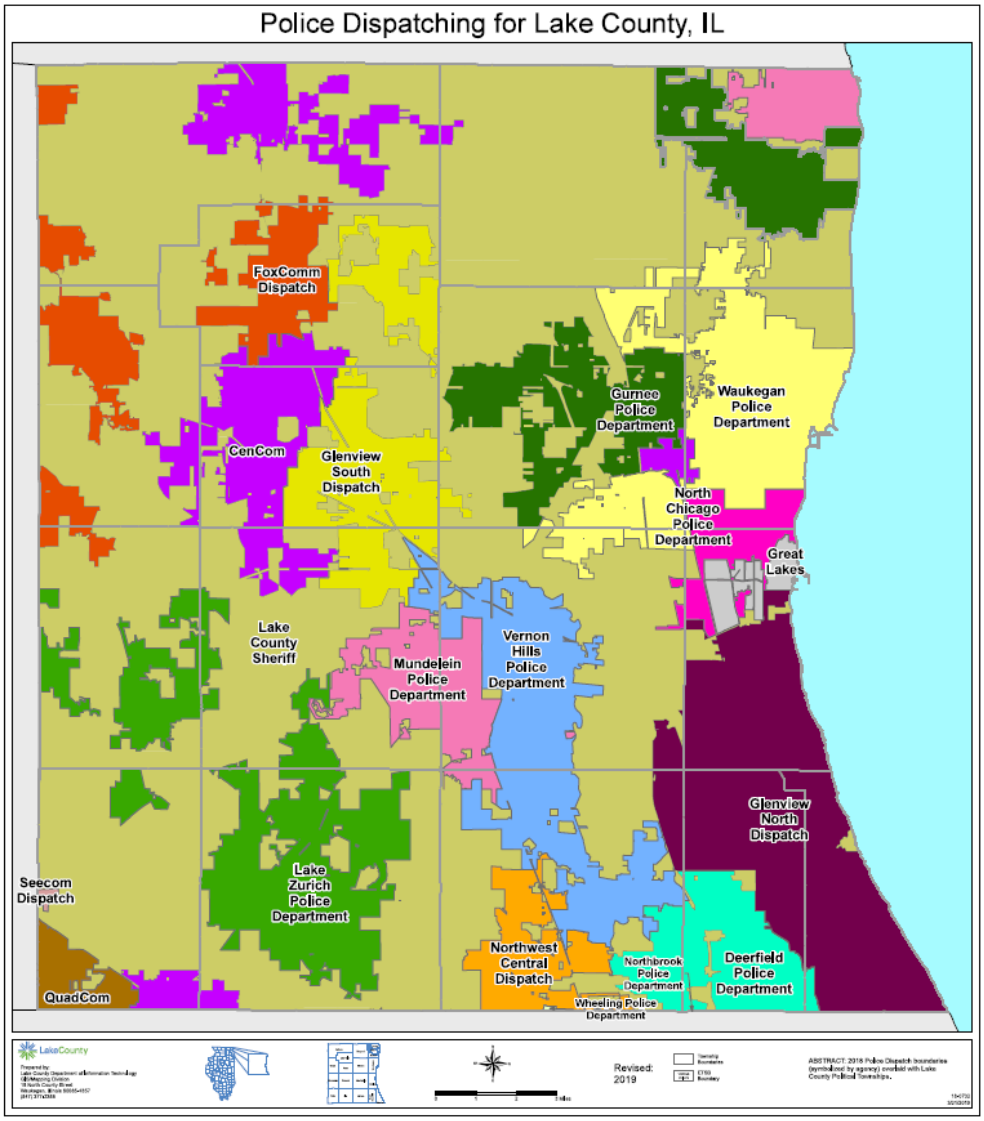


Figure 3: Lake County Law Enforcement Dispatch Boundaries

2.1.1 Non-core Functions

PSAPs typically perform the core functions of 9-1-1 call-taking and emergency response dispatch, along with some additional support functions. Some functions currently performed by member PSAPs are not part of the recognized standard for PSAP core missions. The non-core functions that have been identified by the Consortium are listed in the table below.

Table 3: Non-core Functions

Additional Duties Performed by Telecommunicators	Number of PSAPs that Perform[1]
Detention facility operation	7 of 9
Detention and prisoner monitoring	7 of 9
Fire alarm board monitoring	8 of 9
Security alarm board monitoring	6 of 9
Non-emergency line answering for supported agencies	8 of 9
Phone/dispatch support of **non-public safety** agencies	8 of 9
Emergency warning sirens and public notifications	8 of 9
Lobby in-person window support	4 of 9
Lobby virtual support (intercom/phone)	6 of 9
Additional duties (e.g., after-hours call-offs, LEADS[2])	8 of 9

[1] Current state – North Chicago will become part of the Mundelein PSAP by the end of 2019; this table includes the information provided by their PSAP at the time of data collection.
[2] Law Enforcement Agencies Data System

2.1.2 Call Transfers

Call transfers occur when a 9-1-1 call is received by a PSAP that does not have the required emergency resources or the primary dispatch responsibility. One of the challenges in the current environment concerns obtaining accurate data regarding the specific number of transferred calls, primarily due to the lack of a shared call-handling platform. Calls often are transferred based on the current dispatch arrangements, not contiguous municipal boundaries. The LCSO PSAP also transfers a significant amount of calls to other PSAPs when the need for a fire/EMS response exists. Both factors—although unable to be quantified at this point by data—likely lead to a higher number of call transfers.

2.1.3 Backup PSAP Configurations

Using network control modems in most cases, all PSAPs can transfer 9-1-1 calls to its backup PSAP. The table below summarizes the current backup configurations.

Table 4: PSAP Backup Configurations

PSAP	Backup PSAP	Common Systems
CenCom E9-1-1	FoxComm and Lake Zurich (wireline for Barrington)	LCETSB shared CAD
FoxComm (Fox Lake) E9-1-1	CenCom	LCETSB shared CAD
Lake County Sheriff's Office (LCSO) E9-1-1	Lake Zurich	LCETSB shared CHE
Lake Zurich 9-1-1	LCSO	LCETSB shared CHE
Gurnee 9-1-1	Waukegan	None
Mundelein 9-1-1	Vernon Hills	Mundelein and Countryside LCETSB shared CAD
Waukegan 9-1-1	Gurnee	None
Vernon Hills (and Countryside FPD)	Mundelein	Mundelein and Countryside LCETSB shared CAD

2.2 Governance

2.2.1 Current PSAP Structure

Lake County municipalities are served by 16 PSAPs. Ten are in Lake County. For the eight PSAPs participating in the development of this consolidation plan, the governance is described below.

CenCom

CenCom is a consolidated PSAP that serves law enforcement and fire/EMS agencies. It currently is the only partner that is an independent public safety entity. CenCom is controlled by an executive board of directors that consists of representatives of member agencies. CenCom has established a cost-sharing agreement for its member agencies. In addition to the executive board, CenCom maintains a "chiefs' operations board" to support the development and maintenance of policies and procedures. CenCom serves the following agencies:

Law Enforcement Agencies	Fire/EMS Agencies	Other Agencies
Antioch Police Department (PD), Barrington PD, Round Lake PD, Round Lake Beach PD, Round Lake Heights PD, Round Lake Park PD, Round Lake Park District PD	Barrington, First FPD of Antioch, Greater Round Lake FPD, Mutual Aid Box Alarm System (MABAS) Division 4	None

FoxComm

FoxComm is a consolidated PSAP that serves law enforcement and fire/EMS agencies. It is under the direct control of the Village of Fox Lake Administrator. Fox Lake has established IGAs for the agencies that the PSAP serves. Although not in place yet, a user group is planned. FoxComm serves the following agencies:

Law Enforcement Agencies	Fire/EMS Agencies	Other Agencies
Fox Lake PD, Lake Villa PD, Park City PD, Lakemoor PD	Fox Lake FPD, Grayslake FPD, Lake Villa FPD	Fox Lake Department of Public Works

Gurnee

The Village of Gurnee operates a consolidated PSAP that serves law enforcement and fire/EMS agencies. It is under the direct control of the Gurnee PD. Gurnee has established IGAs for the agencies served by its PSAP. Gurnee serves the following agencies:

Law Enforcement Agencies	Fire/EMS Agencies	Other Agencies
Gurnee PD, Zion PD, Zion Park District PD	Gurnee Fire Department (FD), Zion FD, Beach Park FD, Newport FD	Gurnee Public Works

Lake County Sheriff's Office

LCSO operates a PSAP that provides law enforcement dispatch for its own units, as well as for the unincorporated areas of Lake County. It is under the direct control of the Lake County Sheriff. It does not have any arrangement in place for governance or cost sharing with other agencies. LCSO serves the following agencies:

Law Enforcement Agencies	Fire/EMS Agencies	Other Agencies
LCSO, Lake County Forest Preserve, Lake County Marine Unit, Lake County Court Security, Auxiliary Deputies, Metropolitan Enforcement Group, LCGT	None	Lake County Animal Control, Lake County Public Works, Lake County Department of Transportation, Lake County PASSAGE, Lake County Emergency Management, Lake County Coroner

Lake Zurich

The Village of Lake Zurich operates a consolidated PSAP that serves law enforcement and fire/EMS agencies. It is under the direct control of the Lake Zurich PD. Lake Zurich has established IGAs for the agencies that the PSAP serves. The police department maintains a joint operations committee that meets quarterly to review and guide the development and maintenance of policies and procedures. Lake Zurich serves the following agencies:

Law Enforcement Agencies	Fire/EMS Agencies	Other Agencies
Lake Zurich PD, Hawthorn Woods PD, Kildeer PD, Wauconda PD, Island Lake PD, Tower Lakes PD	Lake Zurich FD, Wauconda FD	None

Mundelein

The Village of Mundelein operates a consolidated PSAP that serves law enforcement and fire/EMS agencies. It is under the direct control of the Mundelein PD. Mundelein has established dispatch services agreements for the agencies that the PSAP serves. The PSAPs operated by the cities of North Chicago and Winthrop Harbor are consolidating with Mundelein's PSAP in 2019. Mundelein serves the following agencies:

Law Enforcement Agencies	Fire/EMS Agencies	Other Agencies
Mundelein PD, North Chicago PD, Winthrop Harbor PD	Mundelein FD, North Chicago FD, Winthrop Harbor FD	Mundelein Public Works

Vernon Hills/Countryside FPD

The Village of Vernon Hills and the Countryside FPD operate a co-located PSAP. The law enforcement side serves Vernon Hills and several other police departments. The fire/EMS side serves Countryside FPD and several other fire districts. Vernon Hills, for law enforcement, and Countryside FPD, for fire service, have cost-sharing arrangements with the other entities served by its respective dispatch operations. Vernon Hills meets with the law enforcement entities served by the PSAP quarterly to review and guide the development and maintenance of policies and procedures. Vernon Hills/Countryside FPD serve the following agencies:

Law Enforcement Agencies	Fire/EMS Agencies	Other Agencies
Libertyville PD, Lincolnshire PD, Vernon Hills PD	Countryside FPD, Knollwood FPD*, Libertyville FD	None
* Knollwood FPD was dissolved in early 2019		

Waukegan

The City of Waukegan operates a standalone consolidated PSAP that serves city law enforcement and fire/EMS. It is under the direct control of the Waukegan PD. Costs are borne directly by the City's budget. Waukegan serves the following agencies:

Law Enforcement Agencies	Fire/EMS Agencies	Other Agencies
Waukegan PD	Waukegan FD	None

2.2.2 ETSB Structure

The participating ETSBs or Joint Emergency Telephone Systems Boards (JETSBs) in Lake County are identified in the table below.

Table 5: Participating ETSBs/JETSBs

ETSB	Serves	ETSB Population
CenCom JETSB	Villages of Barrington, Hainesville, Round Lake, Round Lake Beach, Round Lake Heights, Round Lake Park	91,867
Fox Lake JETSB	Village of Fox Lake; other municipalities are not part of this ETSB but rather the Lake County ETSB	33,879
Lake County ETSB	All municipalities not served by one of the other ETSBs	224,644
Mundelein ETSB	Mundelein, Winthrop Harbor, and North Chicago Note: North Chicago included	68,220
Northeast Lake County ETSB	Gurnee and Zion	55,089
Vernon Hills JETSB	Vernon Hills, Libertyville, and Countryside FPD Note: In 2019, Lincolnshire changed PSAP to Deerfield.	46,733
Waukegan ETSB	Waukegan	88,915
	Total Population	609,347

The ETSB boundaries are displayed in the map below.

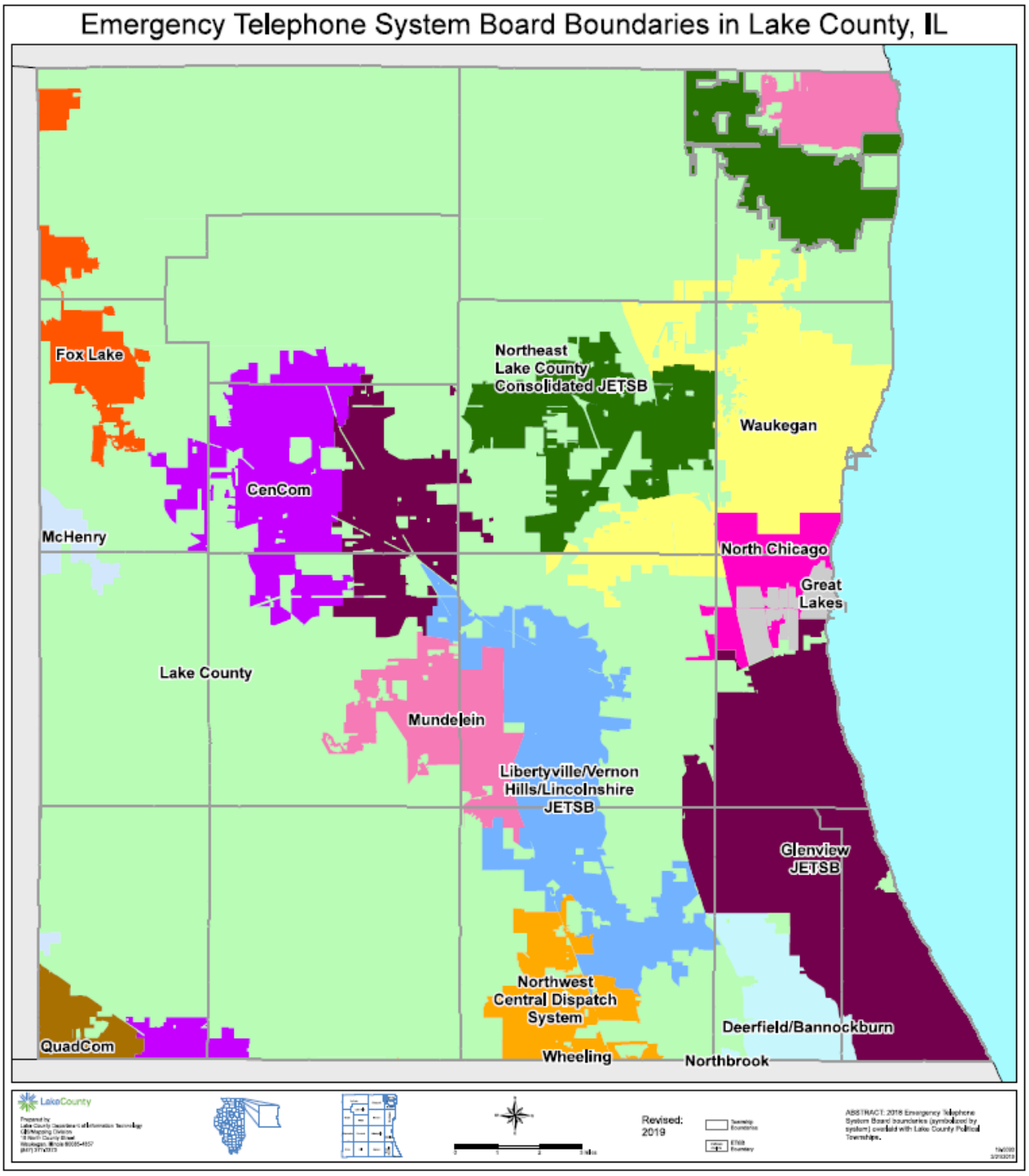


Figure 4: Lake County ETSB Boundaries

Although not a formal committee, the Consortium has begun to bring in representatives of the various ETSBs to discuss potential efficiencies that could be gained by working together.

2.3 Financial

The financial workgroup made significant progress in attempting to document the expenses and revenues associated with the PSAPs participating in the Consortium. MCP has reviewed the financial data estimates provided by the Consortium, which are categorized in a way that will be useful in helping to analyze the total cost of current and future PSAP operations. The table below summarizes the current estimations of expenditures in 2018 based on the financial workgroup's latest effort (August 2019).

Table 6: Current Expenditure Estimate ("True Cost")

PSAP	2018 Expenditures
CenCom	$2,546,310
FoxComm	$1,401,923
Gurnee	$3,584,137
LCSO	$4,671,942
Lake Zurich	$2,014,728
Mundelein	$2,211,040
Vernon Hills	$4,103,369
Waukegan	$2,887,156
Lake County ETSB	$1,801,537
Total Expenditures	$25,222,141

The total "true cost" expenses is estimated to be between $22 million and $26 million, with 9-1-1 surcharge revenues for 2018 estimated to be between $6 million and $7 million.

2.4 Workforce

Within the partner agencies there are between 23 and 36 telecommunicators on duty at any given time. According to the data provided, there are 121 full-time and 20 part-time telecommunicators authorized across the PSAPs. All but two of the PSAPs' telecommunicators are members of collective bargaining organizations. There are four different collective bargaining organizations that represent the telecommunicators. Personnel work a mix of 8-, 8.5- or 12-hour shifts. In calendar year 2018, almost 20,000 overtime hours were reported by seven of nine agencies. The chart below lists the average salary for each PSAP.

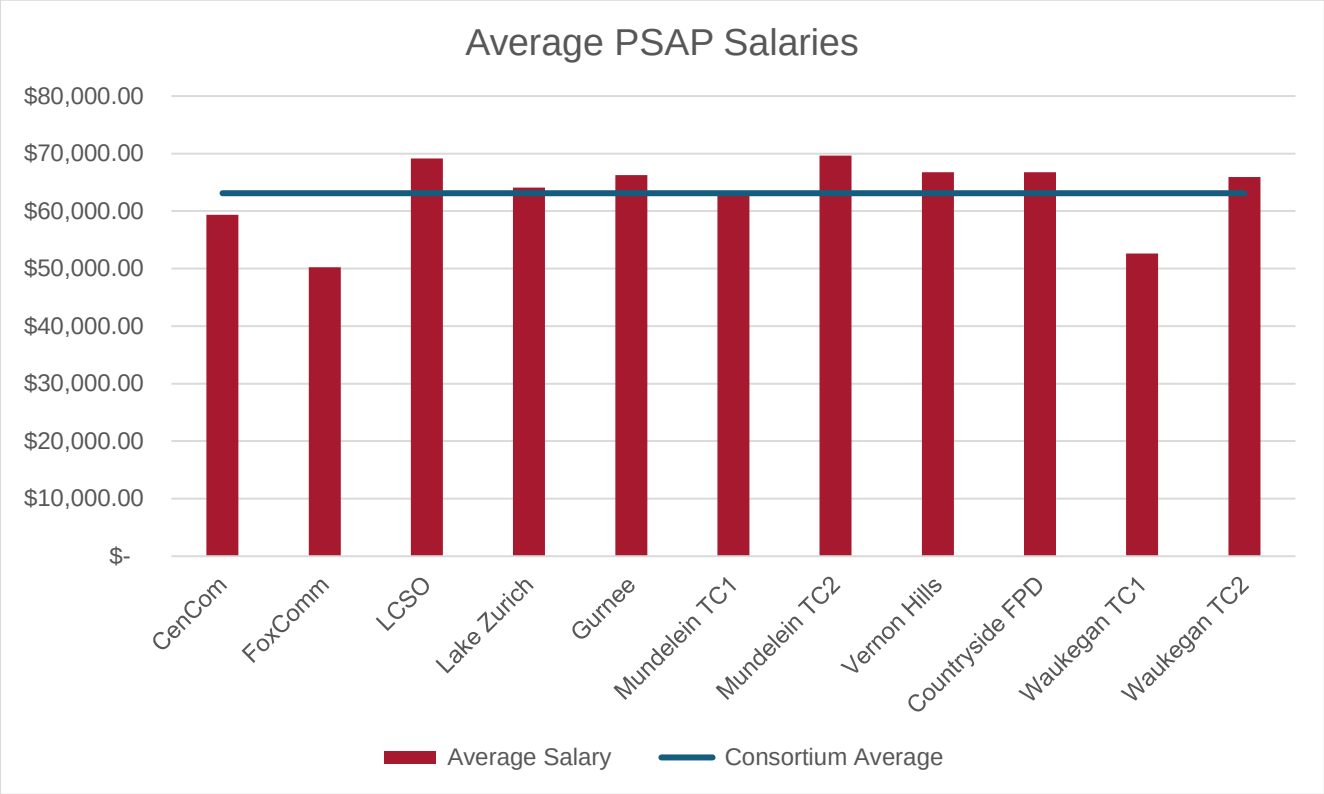


Figure 5: Salary Ranges

2.5 Facilities

There are eight facilities that house the PSAPs represented by the Consortium. All are municipal or county-owned and co-located with some other entity.

Table 7: PSAP Facilities

PSAP	Communications Room Location	Area (sq ft)	Consoles	Expansion	Ownership
CenCom	Round Lake Beach	2,500	8	Yes	Village/Shared Use
FoxComm	Fox Lake	1,940	8	Yes	Village/Shared Use
Gurnee	Gurnee	2,850	6	Yes	Village/Shared Use
LCSO	Libertyville	2,500	9	No	County/Shared Use
Lake Zurich	Lake Zurich	2,650	5	Yes	Village/Shared Use
Mundelein	Mundelein	2,075	7	Yes	Village/Shared Use
Vernon Hills	Vernon Hills	2,640	6	Yes	Village/Shared Use
Waukegan	Waukegan	1,700	6	No	City/Shared Use
Total		18,855	55		

An analysis of the expansion capabilities of the communications rooms, buildings, and land is found in Section 3.4.1.

2.6 Technology

The participating PSAPs operate various disparate systems and some shared systems with little or no standardization.

2.6.1 CAD and Associated Systems

Overall there are 57 CAD positions in the participating eight PSAPs that processed 969,044 incidents in 2017. (Note: Licensed CAD positions do not always equal console positions due to administrative CAD positions.)

Of the eight PSAPs, there are three different CAD vendors in place currently. Four use the Infor EnRoute product, which was procured through the Lake County ETSB. Two use CentralSquare Technologies—formed in 2017 with the merger of Superion, TriTech, Zuercher and the public sector/health care business of Aptean—and two more use Tyler Technologies (formerly New World). Although there are commonalities in CAD vendors, there are some differences in versions in use even among the same vendor.

Seven of the eight PSAPs' served agencies have deployed mobile CAD software to their units. All of them use the software provided by the respective CAD vendor. There are 471 mobile data computers (MDCs) distributed across these systems. Some of the units are equipped with automatic vehicle location (AVL) software that is integrated with the CAD/MDC as well. Further details about these systems were collected as part of the project data book.

There are three different law records management system (RMS) vendors in place and three different fire RMS vendors. Three of the PSAPs are equipped with a jail management system (JMS) for tracking the detention of inmates.

A Tellus Safety Solutions (formerly FATPOT Technologies) CAD-to-CAD platform was installed in all PSAPs that are not using the Lake County ETSB-provided CAD solution; the CAD-to-CAD solution is intended to enable those PSAPs to share incident information.

In March 2019 the technology workgroup released a request for information (RFI) for a new countywide CAD solution. The LCSO also has determined that its law enforcement RMS/JMS needs replacement. The Consortium is evaluating vendor RFI responses for a new CAD/RMS system. The Consortium also discussed plans to issue a request for proposals (RFP) to procure the replacement systems by the end of 2020. The current goal is to release an RFP to standardize the CAD, RMS, and JMS to support consolidation and data sharing.

2.6.2 CHE

In 2017 the partner agencies handled a total of 261,989 9-1-1 calls. There are 55 call-answering positions in the consortium. There is no single countywide call-handling solution in Lake County. However, Lake Zurich and the LCSO operate on an ETSB-owned Solacom system that was installed in 2016. Foxcomm currently operates a standalone Solacom system and is considering an option to join the Lake County ETSB shared system. Other CHE systems in use include Zetron, Motorola Airbus DS (formerly Cassidian), and West/Intrado.

Several PSAPs also are taking advantage of enhanced location services by using RapidLite, which provides an interface to RapidSOS's Clearinghouse, a National Emergency Number Association (NENA) i3-compliant location information server (LIS) and additional data repository (ADR). Only two PSAPs—CenCom and FoxComm—reported having text-to-9-1-1 capabilities.

The participating PSAPs operate a mix of logging recorders provided by NICE, Eventide, and Equature® (formerly DSS Corp.). There is one shared NICE Inform logging recorder system in place at the PSAPs

served by the Lake County ETSB that incorporates the multiple disparate recorders into one storage and retrieval system.

2.6.3 Radio Communications

There are numerous radio systems in use throughout the participating PSAPs. Several police departments, including the Sheriff's Office, utilize the statewide STARCOM21 system core to support a County-installed Motorola Project 25 (P25) Phase II, 700/800 megahertz (MHz) simulcast radio subsystem. Other agencies use a mix of very high frequency (VHF) and ultra high frequency (UHF) radio systems.

Consortium-member PSAPs also communicate on various radio networks, primarily on the VHF band, for fire/rescue and EMS communications. Each PSAP reported having two or more secondary or backup radio systems, and four reported using fire station alerting systems that are interfaced with the CAD systems.

The table below provides a summary of the total number of agencies across the different bands.

Table 8: Radio Bands in Use

Primary Radio Bands	VHF	UHF	STARCOM21	Other 800 MHz	Total
Total agencies per band	24	7	29	1	61

During workgroup discussions, the PSAPs reported that in some cases dispatchers monitor multiple channels or share channels with other PSAPs or dispatch centers. The table below details the breakdown of channels, talkgroups, and dispatchers per PSAP.

Table 9: Channels and Agencies Monitored by Telecommunicators

PSAP	Law Freq.	Law Dispatch	Law Agencies	Fire/EMS Freq.	Fire/EMS Dispatch	Fire/EMS Agencies	Other Agencies
CenCom	3.5	3	7	2	1	4	-
FoxComm	1.5	1	4	1	1	3	1
Gurnee	2	2	3	2	2	4	-
LCSO	4	5	8 – 1[3]	-	-	-	6
Lake Zurich	1	1	6	1	1	2	-

[3] LCSO counts as one primary law enforcement agency due to the number of specialized teams/task forces/talkgroups.

PSAP	Law Freq.	Law Dispatch	Law Agencies	Fire/EMS Freq.	Fire/EMS Dispatch	Fire/EMS Agencies	Other Agencies
Mundelein	2	2	3	2	2	2	1
Vernon Hills	2	2	3	-	-	-	-
Countryside FPD	-	-	-	1	1	3	-
Waukegan	1	2	1	1	1	1	-
Total	17	18	35	10	9	19	8
		per footnote	28				

2.6.4 Network Connectivity

The Lake County ETSB supports a Cambium Networks 11-gigahertz (GHz)/18-GHz, nine-site, point-to-point microwave Emergency Services Internet Protocol (IP) network (ESInet) that interconnects all ETSB-member PSAPs. Another microwave network supports the radio system. Additional capacity exists on both networks that could support shared systems.

The Lake County PASSAGE system is a fiber-optic system throughout the county that transports a combination of traffic management and CAD data. Many of the PSAPs have access to the system data, as well as share the data.

2.6.5 Geographic Information System (GIS) and Next Generation 9-1-1 (NG9-1-1)

Several jurisdictions in Lake County maintain GIS data, including Lake County; the Lake County ETSB; the villages of Grayslake, Gurnee, Round Lake and Vernon Hills; and the city of Waukegan. The County, in coordination with the Lake County ETSB has established an NG9-1-1 database schema for site/structure address points and road centerlines that complies with NENA-STA-006.1-2018, *GIS Data Model for NG9-1-1*. The latest County geodatabase includes 336,191 site/structure address points (323,658 are current address points) and 39,908 road centerlines. The County also has PSAP boundary and emergency response boundary data that is being reviewed and edited by each jurisdiction to improve accuracy and correct topology errors.

3 Analysis

The analysis in this section is intended to support the operations and policy committees in the decision-making and approval of concepts for detailed planning. Significant work has been performed through the previous studies, workgroup efforts, and data-collection program. This section is intended to highlight the key points specific to each program area to support the concepts of operations. The analysis of the data and observations will be combined with further discussion of such characteristics as:

- Identification of the strengths, opportunities and challenges that exist in the current state that could serve as a catalyst for change.
- Opportunities to compare Lake County's current environment with those observed elsewhere to apply best practices or similar PSAP constructs or programs as those found in neighboring communities.
- Identification of assumptions for analysis and planning.

The planning team used several assumptions to analyze the current environment and potential options. These assumptions were required to fill gaps in exact information or data and were based on several factors including, but not limited to, best practices, comparisons with similar operations or counties, or previous studies performed. These assumptions are highlighted clearly throughout the analysis section and will be presented as a concept decision requested of the operations and policies committees for future planning. They were reevaluated often throughout the planning process as further data collection or analysis was performed.

There are also recommendations for further data collection, analysis, or planning that are not directly tied to one of the concepts of operation.

3.1 Operations

3.1.1 Non-core Functions

One of the challenges is the prevalence of the ancillary or "non-core" duties performed by the various PSAPs in the Consortium. These non-core functions will have an impact on some municipalities' decisions regarding consolidation. There are some that are closely tied with normal operations in a PSAP that will likely carry over—like some form of security camera monitoring, traffic camera monitoring and fire alarm boards. A review of the duties indicates some that are more common in other PSAPs observed by MCP, and although "non-core," can be addressed through innovative staffing or technology concepts.

Most of the PSAPs' performance of non-core functions arises out of the traditional municipal functions of local police forces, which needed a 24-hour capability of handling the non-core functions. Even in the case of CenCom—which is the only independently governed PSAP in the Consortium—detention monitoring, for instance, is still a component of its operation. When a traditional PSAP is formed for the sole purposes of 9-1-1 call handling and supporting the emergency dispatch function, most of these functions are offloaded to other entities or agencies—as they are not truly a PSAP function. Some of the challenges associated with using PSAP personnel for non-core functions include:

- Telecommunicators can be distracted from his or her core functions when handling non-core functions.
- Telecommunicators are not giving full attention to some of the non-core functions, such as camera monitoring, due to responsibilities of handling emergency calls.
- Telecommunicators generally are paid at a higher rate than would be necessary to fill the skillset needed for performing non-core functions.
- Additional training is necessary for telecommunicators to support the non-core functions.
- Less training is necessary for personnel to perform non-core functions.
- Functions such as lobby service would require permitting more public access to the PSAP than is traditionally recommended for a mission-critical facility.

The partners acknowledge that support of law enforcement prisoner detention operations is not a primary PSAP function; however, most of the partner PSAPs perform some functions related to detention. A workgroup has been proposed to discuss what is being called the “detention dilemma” and how to best resource this function.

Seven partner PSAPs monitor and manage fire alarm boards for some or all of their participating agencies. Six monitor and manage security alarm boards for some or all their participating agencies. The central station alarm equipment varies by age and manufacturer at each PSAP. PSAPs receive most alarms via a Keltron Active Network radio system. In a few instances, there may be direct-wired panels or phone lines in use.

Approximately 3,126 accounts are monitored directly by the PSAPs. Processing alarms increases staff workload and takes them away from core functions. In cases where revenue is received through the monitoring or direct oversight of the alarm board function, agencies that wish to consolidate may be reluctant to lose that revenue stream prior to consolidation—possibly delaying consolidation efforts.

There are neighboring PSAPs that have maintained local alarm monitoring capabilities (and the revenue stream associated with them). For instance, DU-COMM in DuPage County supports alarm boards with part-time personnel who have a different pay classification than a telecommunicator.

Seven PSAPs are responsible for remote operation of doors or sally ports in addition to monitoring audio or video. While some of these functions may be performed in the consolidated environment, doing so may depend on the technology in use at each of the current facilities. Agencies that wish to consolidate will be required to find an alternative method prior to consolidation. This would not be a significant issue for a newer IP-based system.

All participating PSAPs, except Mundelein, answer calls for the public safety agencies that they serve. Several also serve as the municipal phone operator for non-public safety agencies, such as public works, after hours.

All PSAPs, except LCSO, perform some functions related to siren activations and emergency alerts and warnings. Several PSAPs also have access to the statewide Emergency Management Network (EMnet) secure messaging system. This function is commonly performed by PSAPs nationwide as the hub of

emergency communications unless it has been a function of emergency management, as is the case with the LCSO PSAP. It is anticipated that this function would be planned for any consolidated operations.

All PSAPs reported performing some form of on-premises video camera monitoring. In some cases, this is part of the prisoner-detention function. Additionally, all but one PSAP have access to the Lake County PASSAGE traffic camera network. While these cameras are web-based, the LCSO can control 300-plus cameras under an agreement with the Lake County Traffic Management Center. It is recommended that this function be planned for any consolidated operation.

3.1.2 Call Transfers

A key benefit of the reduction in the number of PSAPs is the reduction in the number of 9-1-1 call transfers to other PSAPs, which is one of the stated objectives of consolidation. For instance, the LCSO PSAP transfers all fire service/EMS calls to the appropriate PSAP for dispatch. In addition, some PSAPs transfer calls to other communications centers outside Lake County. The only two PSAPs able to report call transfer data were Lake Zurich and CenCom—at 3,513 and 1,245 emergency call transfers in 2017, respectively. Of the 9-1-1 calls received by the participating PSAPs, 78 percent were wireless calls, which often are picked up by the closest cell phone tower regardless of PSAP boundaries, contributing to an increased number of call transfers.

Another factor that likely increases the amount of call transfers is inconsistency between PSAP service area boundaries and municipal boundaries. For example, Mundelein has several member municipalities whose boundaries are not all contiguous with others in its footprint—so, gaps exist that, especially in the case of wireless calls, increase the likelihood of call transfers. In many cases, consolidations of PSAPs that do not share a boundary does little to decrease the number of transferred 9-1-1 calls; it only changes the entity receiving and transferring the call.

3.1.3 Backup PSAP Configurations

Most of the participating PSAPs have limited ability to provide dispatch functions for the centers that will send calls to them in a backup situation. There is no consistency in the shared systems and correlation between backup configurations, aside from call handling in some cases. Although the PSAPs may be able to accommodate a PSAP evacuation because they have the space and the ability to divert calls, there still can be an inability to handle another's dispatch functions and fully implement a continuity of operations (COOP) plan in the current environment.

Table 10: Operations Strengths, Opportunities, and Challenges

Strengths and Opportunities	Challenges
Until a common CAD platform can be procured, the CAD-to-CAD interface provides a higher level of situational awareness between PSAPs that can help to alleviate “call transfers gone bad.”	Call transfers increase the likelihood of mistakes in routing and errors in coordination between PSAPs.
	Non-core functions can distract telecommunicators from emergency duties.
	The current environment, which allows for non-contiguous boundaries since municipalities select PSAPs in a competitive environment, inherently leads to increased transfers.

3.2 Governance

3.2.1 Current Structure

The governance models currently in place likely would not provide an adequate level of oversight and user input for a larger consolidated PSAP. Most of the existing entities are primary operating organizations or municipalities that offer contracted services to customer agencies. While several of the existing PSAPs have implemented user and operational committees to foster input from their participating entities, this model likely would not work in a consolidated environment. As the level of responsibility increases—such as occurs with the need for an agreeable cost-sharing model, coordination of shared systems and development of regional policies that serve diverse entities—so will the users’ desire or demand to provide input.

3.2.2 ETSB Structure

Two problems and inefficiencies noted with the current ETSB/JETSB governance are as follows:

- Participation in an ETSB does not always follow the participation with a specific PSAP.
- Participation with an ETSB or PSAP does not always follow logical geographic boundaries; rather, over the years, the system has allowed ETSBs, municipalities, and PSAPs to “shop” for options. While this is usually advantageous regarding cost savings for a municipality, this does not always lead to the most operationally effective and efficient call-taking or dispatching arrangement.

Table 11: Governance Strengths, Opportunities and Challenges

Strengths and Opportunities	Challenges
Current environment allows for a more localized approach to governance of an ETSB.	ETSBs likely are paying for duplicative services and equipment in the non-consolidated environment.
Efforts to start a dialog between the various ETSBs in Lake County have been positive and could lead to at least potential virtual consolidation strategies. This type of dialog could also lead to a further unification of the ETSBs.	There are missed opportunities for the creation of larger, shared systems because multiple, smaller ETSBs are focusing on local efforts.
	ETSBs have existing financial obligations as well as plans—and may be reluctant to support efforts toward consolidation that they perceive as threatening.

3.3 Financial

The financial workgroup has had to overcome some challenges in obtaining common financial data.

- Some PSAPs have standalone budgets and some are integrated with larger entities (e.g., municipalities, county).

- Each PSAP has different line items. The Consortium developed a financial summary tool during the data collection process, and the financial workgroup continues to review and make modifications to it that support the concept of an “apples to apples” comparison. The estimated numbers included in this document were derived using a multiplier system that was established by the Consortium project manager and the financial workgroup.

- Some costs that would be beneficial for the Consortium to track and analyze may be directly called out in PSAP budgets but buried in shared general services funds. For the purposes of concept development, the financial workgroup developed ways to estimate certain expenses if they were not clearly available from the participants (e.g., equipment and facility maintenance, utilities).

Another challenge has been obtaining the cost-sharing models currently in place at the PSAPs that currently provide consolidated services. Due to the competitive environment regarding the delivery of 9-1-1 services, some participants have been reluctant to share cost-sharing models/formulas with the Consortium.

Table 12: Finance Strengths, Opportunities and Challenges

Strengths and Opportunities	Challenges
	Members who are comfortable with their current costs or cost-sharing models may be reluctant to change.
	The current environment promotes competition between PSAPs—leading to services being dispatched from some PSAPs solely due to cost, not the optimum operational location

3.4 Workforce

Many of the PSAPs currently operate in a vertical configuration, likely due to size and the current environment that they serve. In a vertical configuration, a telecommunicator handles a call from beginning to end, and at the same time is responsible for dispatching emergency responders and monitoring radio traffic. In a vertical configuration, the telecommunicator is faced with determining which takes precedence—handling a call presenting a life-threatening situation or dispatching responders to a potentially life-threatening incident.

As PSAPs grow, the concept of a horizontal configuration becomes more necessary. A horizontal configuration splits the call-taking and dispatch responsibilities between various telecommunicators. This could be due to increased geographic splits within a PSAP's overall jurisdiction that require dedicated dispatchers (or call-takers) to be responsible for specific zones. This also could be due to an increase in the number of units that need to be monitored, or to provide better span of control when incidents occur. Although it has been done successfully through manual means, today's call-handling and CAD technology makes the process of horizontal dispatch more effective.

In most cases, the PSAPs currently operate with working supervisors, who also perform the duties of telecommunicators. None of the PSAPs' maximum staffing levels exceed the acceptable span of control, which calls for a maximum of seven subordinates to one supervisor (the LCSO has the highest telecommunicator staffing, reported at seven). This, as well as the prevalence of vertical dispatching, allows for the concept of a working supervisor to be successful.

One of the challenges of analyzing staffing patterns in the current environment was the non-core (ancillary functions) that are performed. These functions vary across PSAPs and there is no standard way to apply metrics to many of them. It is assumed that although the non-core functions impact the 9-1-1 process, if they are not going to be a part of the end-state 9-1-1 environment, their analysis should be kept separate and not part of the workforce analysis being performed, to accurately determine the resources needed to handle the emergency call volume.

Another area where non-core functions, as well as other factors, impacted the analysis of the current environment was in attempting to obtain hourly call volume numbers. The lack of a common management information system (MIS) platform limits the availability to obtain reports that detail the call volume per hour—a calculation that is important in a detailed staffing analysis for each individual PSAP.

The data collection workgroup recommended determining call volume using the CAD hourly summaries because they are available. However, there are several factors that, in MCP's opinion, would lead to inaccurate results using this method.

- Some PSAPs document non-core (non-emergency) functions as a CAD event, which would inaccurately inflate CAD events.
- Some 9-1-1 calls generate multiple CAD entries; this is common in centers that operate in a horizontal configuration that process CAD events for police and fire/EMS separately.
- Some CAD events (and events in general) have several 9-1-1 calls associated with them. For example, a vehicle accident at a busy intersection or along a highway could have many wireless and wireline calls associated with it.
- Some entities may have an extremely high administrative burden during the daylight shifts that generate CAD entries, which may not paint an accurate picture of the actual call volume.
- Likewise, some entities may have less CAD entries yet many more 9-1-1 calls for higher-priority incidents during an evening shift.

Table 13: Workforce Strengths, Opportunities and Challenges

Strengths and Opportunities	Challenges
	Non-core functions impact staffing patterns that are difficult to measure.
	Lack of common MIS leads to gaps in data available for staffing analysis.

3.4.1 Preliminary Staffing Analysis

The primary goal of the preliminary staffing analysis is the determination of the number of physical console positions required for consolidated PSAP operations and how many of these positions should be routinely staffed throughout the day. For this reason, the details of this staffing analysis were compared to IXP's report and several representative sample PSAPs to develop an initial estimate of the number of consoles necessary for the feasibility of the concept being analyzed. MCP will make staffing recommendations later that emphasize that a detailed, subject-matter-expert-led staffing analysis be performed once the concept is approved at an appropriate time following concept selection, yet before any actual changes are made in staffing patterns.

MCP's preliminary staffing analysis involved a multimodal approach that considers workload, volume- and coverage-based staffing, and performance metrics. Volume-based staffing calculates the number of personnel required to handle the volume of the respective data, while coverage-based staffing calculates the number of personnel required to staff one position 24 x 7. MCP uses these calculations in tandem. MCP also uses Erlang C calculations and its experience in the 9-1-1 industry to assist in projecting the number of telecommunicators (call-takers, dispatchers, and supervisors) required to efficiently answer and dispatch emergency and non-emergency calls for law enforcement, fire/rescue, and EMS response. MCP analyzed the resulting data, considering the operational configuration, to determine staffing requirements.

Four assumptions were made for the purposes of this analysis. First, it is believed that the consolidated PSAP will be designed to operate in a horizontal configuration, i.e., with a division of responsibilities between the call-taking and dispatching functions. In a horizontal center, dispatch is not delayed while information is gathered from the caller.

Second, two shift schedule options were considered for each position:

- Three 8-hour shifts each day (08:00–1600, 16:00–00:00, 00:00–08:00)
- Two 12-hour shifts each day (06:00–18:00, 18:00–06:00)

Note: The exact shift times are for representation purposes only, as the final schedule will be determined during the operational decision-making process.

Third, the calculations consider both an individual's utilization rate and true availability as part of all the calculations. Utilization is calculated by subtracting the total time away from the console for meals and breaks and completing other tasks from the total possible minutes in a shift. This results in a percentage of time the employee truly can be used. True availability is calculated by multiplying the average leave per year, per employee by the utilization rate. These values were not available; therefore, they were obtained from two other consolidated dispatch centers in the region and averaged.

Fourth, the reported attrition rate from the data collected was 2.9 percent. Initial feedback considered this number to be low—however, MCP verified this number with two other PSAPs in the region, and both reported similar attrition rates. We also verified that although the attrition rate certainly affects the calculations—when used for the purposes of console estimation, given the overflow positions and method used—it would not have a significant impact.

Summary of MCP Analysis

The tables below summarize the full-time equivalents (FTEs) that MCP has estimated are necessary for the purposes of initial facility concept development (particularly for console number development).

Table 14: 8-hour Shift

Personnel	Proposed Number of FTEs Using Volume Formula
Call-takers	24.38
Law enforcement dispatchers	29.13
Fire/EMS dispatchers	8.23
National Crime Information Center (NCIC) dispatchers	2.31
Shift supervisors	9
Total personnel (rounded)	73

Table 15: 12-hour Shift

Personnel	Proposed Number of FTEs Using Volume Formula
Call-takers	22.29
Law enforcement dispatchers	26.84
Fire/EMS dispatchers	7.58
NCIC dispatchers	2.06
Shift supervisors	8
Total personnel (rounded)	67

Because the shift-hour configuration likely will be decided further into the implementation and any concept selected will require flexibility, MCP used the higher 8-hour figure (73 FTEs) for the further development of staffing snapshots and subsequent console counts.

A normal full-time employee will work 2,080 hours in a year. MCP multiplied the estimated FTEs for an 8-hour shift referenced in the table above by 2,080 to determine the total number of hours worked in a year. We then divided that figure by the total number of hours in a year (8,670) to determine an “hourly snapshot” to estimate how many personnel would be on the communications floor in a given hour.

Supervisory personnel were proposed based on the discussion outlined in the “Supervisor” section of the Staffing Analysis in Appendix C. The table below summarizes MCP’s estimation of position level staffing “at any given time” for concept development.

Table 16: Hourly Snapshot of Conceptual Staffing

Personnel	Proposed Number of FTEs Using Volume Formula
Call-takers	6
Law enforcement dispatchers	7
Fire/EMS Dispatchers	2
NCIC dispatchers	1
Shift supervisors	2
Total personnel (rounded)	18

Normally, the process of determining how many FTEs should be distributed over each shift is done with calculations based on call and incident volumes per hour. MCP proposes that this data be used in developing the console requirements in the next section, because it is validated against other data sources, including other PSAPs and studies, and that it is solely used for the concept development.

MCP also performed a staffing analysis based on call volume—using assumptions where necessary—and verified the results against 13 PSAP studies and staffing analyses of similar-sized PSAPs around the country. The results of this analysis are in Appendix C.

3.4.2 Workgroup Staffing Analysis

The personnel and staffing workgroup performed additional staffing analysis based on review of the previous study, information from neighboring consolidated PSAPs, and the current partner environment leveraging the information contained in the project data book for 2017. The table below indicates collective statistics from the analysis.

Future Consolidated PSAP Operations and Staffing Work Sheet

Comparative Analysis	IXP Study - Full Consolidation	DU-COMM (2017)	Laraway Comm Center (Will County)	Consortium Current (2017)	MCP "Rough" Estimate (New PSAP / Call Volume)	Working Group "Rough" Estimate (Comparison & Best Practices)	Notes for Working Group "Rough" Estimate
Operations							
# of PSAPs	2	1	1	8	**1**	**3**	**Assume 3 PSAPs under 1 Agency (50%/25%/25% Call Volume Spread)**
Operating Budget	$22.7 M	$18.6 M		$22.2 M			
Population Served	705,186	850,000	720,000	600,000	**600,000**	**600,000**	**Assumes all agencies transition**
Total Agencies		44	34	48		**48**	
LE Agencies		22		28		**28**	
F/EMS Agencies		22		20		**20**	
Other (Parks, PW, etc)				*8*		***8***	
Total Call (In & Out)	1.4 M	1.2 M		1.33 M		**1.2M**	**Assumes 10% decrease with fewer transferred calls**
911 Calls	352,593	272,070		261,855		**275,000**	
CAD Events		731,448		953,371			
LE		653,792		847,934			
F/EMS		77,656		67,103			
Telecomunicators							**Horizontal Dispatch Model / Unplugged Supervisors / One "freq" for each Dispatcher**
Total Physical TC Positions	64	34	24	55	**26**	**46 - 52**	
Supervisors		6	6		**9**	**15**	**Use an FTE Factor of 5**
Authorized TCs							
FT	170	82	54	136	**64**	**95**	**Use an FTE factor of 5**
PT	0	2		11		**0**	
Other (Alarms)	0	3		0		**3**	**1 PT alarm board monitor during day shift**
On Duty (Average Total)	32	18	13	23 to 36	**18**	**22**	**(18-26 TCs) Max: 12 (50%) / 7 (25%) / 7 (25%) Ave: 11 / 6 / 5 Min: 8 / 5 / 5**
Supervisor	2		1		**2**	**3**	**"Unplugged" Max: 1 / 1 / 1 Ave: 1 / 1 / 1 Min: 1 / 1 / 1**
Call Taker	8		0		**6**	**5**	**Max: 3 / 2 / 2 Ave: 2 / 2 / 1 Min: 1 / 1 / 1**
LE Dispatch	14		8		**7**	**9**	**2 "freqs" can have pri and backup TC. Max: 5 / 2 / 3 Ave: 5 / 2 / 2 Min: 4 / 2 / 2**
F/EMS Dispatch	8		4		**2**	**4**	**Max: 2 / 1 / 1 Ave: 2 / 1 / 1 Min: 2 / 1 / 1**
LEADs	0		0		**1**	**1**	**Max: 1 / 1 / 0 Ave: 1 / 0 / 0 Min: 0 / 0 / 0**
Talk Groups / "Freqs"							
LE	14	9	4	17		**8**	**With Call Takers, may be able to get to fewer "freqs"**
F/EMS	8	4	2	10		**4**	**With Call Takers, may be able to get to fewer "freqs"**
Turnover Rate	0%	10%		Various	**3%**	**5%**	
Notes	Service for all of Lake County	1 of 3 PSAPs in County. 1 ETSB. No Call Takers	1 of 3 PSAPs in County. 1 ETSB. This PSAP dispatches for Sheriff. No Call Takers.	21 Participating Entites / 9 PSAPs		**Service only for current consortium partners**	**Further effeciencies could be built into staffing by decreasing "unplugged" supervisors, decreasing the number of call takers with a "waterfall" down to Fire Dispatchers and then the LEADs dispatchers, and/or not staffing a backup dispatcher on two "freqs".**

Figure 6: Comparative Analysis

An agreed-upon summary of estimates follows.

Table 17: Combined Staffing and Console Estimates for Future Planning

Staffing and Console Estimates	
# of telecommunicators working per shift	18-26 (Current environment: 23-36)
Total # of telecommunicators	73-110 (Current Environment: 136)
Total Consoles – 1 Large Center	26 positions

3.4.3 Additional Staffing Efforts

As the initial concept is developed, MCP will continue to work with the Consortium to further enhance the preliminary staffing analysis to allow for actionable decisions and incorporation into the implementation plan. MCP has provided a list in Appendix D regarding the data points that can enhance the staffing analysis. This gap analysis also includes any assumptions that were used to calculate the preliminary staffing numbers used in the planning document. The personnel and technology workgroups should review these points to determine if any changes in systems, policies, or data collection could be incorporated to gather these data points for future refinement of estimates.

Once a concept for governance and facility configuration is chosen, MCP recommends that efforts and discussions begin to establish a more detailed organizational structure for the administrative staff of the consolidated entity that will oversee the 9-1-1 system. This would be the appropriate time to detail and consider whether any administrative or technical functions will be handled by personnel directly employed by the ETSB or the consolidated entity. Typically, ETSBs that oversee PSAPs with varied governance entities may serve as a clearinghouse for staff that must oversee operations that span across those PSAPs. Examples would be:

- Countywide 9-1-1 Director—where there is a need to coordinate technological (ETSB provided) systems and policies across multiple PSAPs with separate governance entities.
- Technical Staff—examples would be GIS and Master Street Address Guide (MSAG) personnel, information technology (IT) support, training, and quality assurance (QA) personnel. This would serve where there is a need to coordinate these functions across multiple PSAPs.

This iteration may not be necessary based on the governance and PSAP model chosen—but it should be analyzed and incorporated into the final plan if necessary.

In reviewing the current hiring processes of each individual PSAP under consideration for consolidation, multiple different processes were identified, as shown in the table below.

Table 18: Hiring Process Summary

Hiring Process	Number of Agencies
Coordinated directly by the agency	1
Coordinated by the agency head, in conjunction with village or city Human Resources (HR)	7*
Coordinated by the agency head, advertised solely through online posting/advertising	2
Coordinated solely by village or city HR	1
Not reported	4
* One agency coordinates between the agency head, police HR and village HR	

There are similarities between the hiring processes for most agencies involved; approximately half of the agencies (7 out of 15) receive outside HR services and support from their individual localities. Regardless of which consolidation scenario is enacted, a coordinated hiring effort will best ensure that the needs and requirements of all agencies involved are met.

3.5 Facilities

The planning team analyzed the facility information contained in the project data book that had been gathered by the Consortium through the efforts of its dedicated facilities workgroup. There are opportunities for expansion of communications rooms and buildings and available land at various sites. This analysis is intended to support the proposal of several concepts of operations, and the ultimate selection of one for detailed planning.

Eight PSAP facilities were summarized in the project data book.

- Six of the eight facilities have some capacity for expansion of the communications floor. This was verified by site visits performed in February 2019.
- Four of the eight facilities have some capacity for expansion on the site of the PSAP. This was verified by site visits performed in February 2019.
- Two of the facility owners (Gurnee and Vernon Hills) reported having land and/or a building available for the construction of a new PSAP.

Partners identified four additional greenfield sites throughout the county that would support the construction of a new PSAP (new or existing building).

- The Wauconda Fire District owns ten usable acres in Volo that includes a 300-foot tower and shelter that would be available for use.
- The Village of Mundelein has proposed the potential repurposing of a 32,000 square foot fire station.
- Lake County has 30 acres available at the Libertyville Government Campus that would be available for use.
  - In March 2019, the County secured an architect (FGM Architects) to perform an initial feasibility study of the construction of a combined emergency operations center (EOC), Lake County ETSB office, and 9-1-1 facility on this property.
  - Completed in early October 2019 the study focused on two options for constructing the combined 9-1-1, EOC, and ETSB facility, just north of the public safety facility with a link between the two facilities.
    - Option 1: Replacement of the existing LCSO 9-1-1 center with EOC/ETSB space, ~19,702 sq ft. This option supports eight dispatch positions plus one supervisor positions for the existing 9-1-1 center.
    - Option 2: PSAP co-location/consolidation with EOC/ETSB space, ~28,237 sq ft. This option supports 24 dispatch positions and two supervisor positions.
    - The details of the study can be found in Appendix J.
- The Lincolnshire-Riverwoods FPD has proposed the potential repurposing of a 20,600 square foot fire station. They also provided a comprehensive facility study that was commissioned by a local architecture and engineering firm.

The fact that many of the facilities have room for expansion can be seen as a strength, and this fact will help to support the rationale for the concept of operations.

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None of the current and greenfield sites were reported to be in flood hazard areas as is evidenced in the map below.

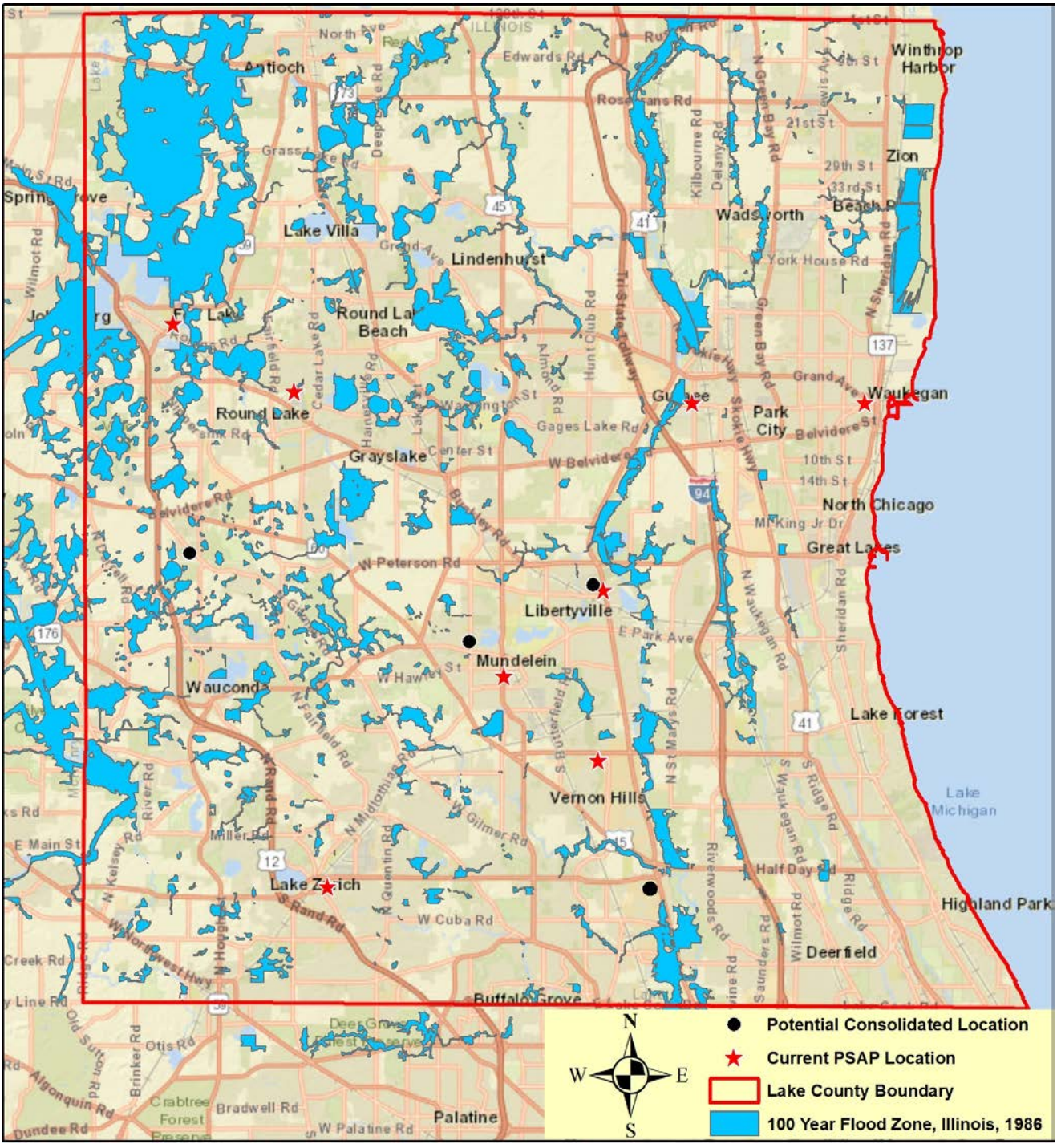


Figure 7: 100-Year Flood Zone (1986)

To enable the immediate selection of an appropriate building footprint, MCP recommends that the console planning baseline be set as outlined in the table below.

Table 19: Console Planning Baseline per Position Staffing

Consoles	Proposed Number of Consoles (Including 25 Percent Growth) – MCP	Proposed Number of Consoles – Workgroup (See Figure 6)
Call-takers	7	5
Law enforcement dispatchers	9	9
Fire/EMS dispatchers	2	4
NCIC dispatchers	1	1
Shift supervisors	3	3
Overflow	4	4
Total consoles	26	26

This accounts for a 25 percent growth factor for population-based growth in the proposed environment. Any analyses based on population were performed using the consortium's reported population of 590,935.

To validate the number of consoles recommended for planning purposes, MCP analyzed 13 other PSAPs and their staffing-to-console ratios. The characteristics of these PSAPs are as follows:

- Three are in the Chicago Metropolitan Statistical Area (MSA); one is immediately adjacent to.
- Other PSAPs analyzed, according to similar populations or characteristics, were in California, Colorado, Maryland, North Carolina, Pennsylvania, and Tennessee.
- A majority of these PSAPs had detailed staffing studies or PSAP assessments performed by MCP.
- Two PSAPs' data was provided as part of a statewide assessment.
- One PSAP's data was obtained from publicly available budget and annual report data, due to its proximity to Lake County.

Some factors that should be considered that could impact the validation of the data are:

- Different demographics of the various PSAPs surveyed.
- Different facility and staffing needs at the various facilities.
- Many facilities' console configurations are not selected based solely on staffing needs.

Since no other standard exists, MCP used averages and analysis to validate our estimate—yielding the observations below.

- The average ratio of available consoles to regularly staffed positions (personnel) was 1.27. The 26 consoles to 18 estimated staffed positions are 1.44 and higher than the median figure.
- The average ratio of population to console was 16,317. This estimate is 22,728 per console and slightly higher than the median figure.
- The average ratio of the console to FTE was 3.24. This estimate is 2.81 consoles per FTE and slightly higher than the median figure.
- Of the 13 other PSAPs analyzed, the estimates for Lake County were most similar in relation to other PSAPs in the Chicago MSA.

Based on the preliminary nature of the staffing numbers, and the fact that these calculations are not outliers, MCP is comfortable with its use for these initial planning efforts.

The facility workgroup has begun to look at seven different facility scenarios. MCP placed the console estimates and square footage into these various options, where applicable:

ASSUMPTIONS

Technology/systems at each site are identical; 26 total positions required; 165 square feet per telecommunicator position

Table 20: Facility Scenarios

Scenario[4]	Description	Capacity Requirements
A – Single Facility 4,290 ft^2 / 8,580 ft^2	One facility that handles the entire load. This scenario would require that the PSAP coordinate backup plans with another PSAP within or adjacent to Lake County.	Site 1 – Normal Capacity – 100% (26 consoles) Consider allowing the facility for a 100% future expansion for potential countywide use.
B – Two Equal Facilities 2,145 ft^2 / 4,290 ft^2	Two facilities that share the load equally. Both must be sized to	Site 1 – Normal Capacity – 50% (13 consoles) Site 1 – Surge Capacity – 100% (26 consoles)

[4] Based on 165 square feet per telecommunicator doubled to include operations, support, mechanical and technology areas

Scenario[4]	Description	Capacity Requirements
	assume 100% of the load if one fails. This is like the relationship between DU-COMM and ACDC in DuPage County.	Site 2 – Normal Capacity – 50% (13 consoles) Site 2 – Surge Capacity – 100% (26 consoles)
C – Equal Thirds 1,485 ft^2 / 2,970 ft^2	Three facilities that share the load equally. Each is sized so that failure of one could allow its call volume to be distributed among the other two. Builds in an automatic 50% expansion capability (that is not distributed, however).	Site 1 – Normal Capacity – 34% (9 consoles) Site 1 – Surge Capacity – 50% (13 consoles) Site 2 – Normal Capacity – 34% (9 consoles) Site 2 – Surge Capacity – 50% (13 consoles) Site 3 – Normal Capacity – 34% (9 consoles) Site 3 – Surge Capacity – 50% (13 consoles)
D – Large and 2 Satellites	Three facilities that share the load. One primary facility is sized larger to cover half of the load. The other two split the remaining load. Failure of the large facility would be distributed equally among the two smaller. The large facility could accommodate the failure of either or both smaller facilities.	Site 1 – Normal Capacity – 50% (13 consoles) Site 1 – Surge Capacity – 75% (20 consoles) Site 2 – Normal Capacity – 25% (7 consoles) Site 2 – Surge Capacity – 50% (13 consoles) Site 3 – Normal Capacity – 25% (7 consoles) Site 3 – Surge Capacity – 50% (13 consoles)
E – Large and 3 Satellites	Four facilities that share the load. One primary facility is sized larger to cover half of the load. The other three split the remaining load. Failure of the large facility would be distributed equally among the three smaller. The large facility could accommodate the failure of up to three smaller facilities.	Site 1 – Normal Capacity – 50% (13 consoles) Site 1 – Surge Capacity – 67% (17 consoles) Site 2 – Normal Capacity – 17% (4 consoles) Site 2 – Surge Capacity – 30% (8 consoles) Site 3 – Normal Capacity – 17% (4 consoles) Site 3 – Surge Capacity – 30% (8 consoles) Site 4 – Normal Capacity – 17% (4 consoles) Site 4 – Surge Capacity – 30% (8 consoles)
F – Large and 4 Satellites	Five facilities that share the load. One primary facility is sized larger to cover half of the load. The other four split the remaining load. Failure of the large facility would be distributed	Site 1 – Normal Capacity – 50% (13 consoles) Site 1 – Surge Capacity – 63% (16 consoles) Site 2 – Normal Capacity –13% (3 consoles) Site 2 – Surge Capacity – 25% (7 consoles) Site 3 – Normal Capacity –13% (3 consoles) Site 3 – Surge Capacity – 25% (7 consoles)

Scenario[4]	Description	Capacity Requirements
	equally among the four smaller. The large facility could accommodate the failure of up to four smaller facilities.	Site 4 – Normal Capacity –13% (3 consoles) Site 4 – Surge Capacity – 25% (7 consoles) Site 5 – Normal Capacity –13% (3 consoles) Site 5 – Surge Capacity – 25% (7 consoles)
G – Large and 5 Satellites	Six facilities that share the load. One primary facility is sized larger to cover half of the load. The other five split the remaining load. Failure of the large facility would be distributed equally among the five smaller. The large facility could accommodate the failure of up to five smaller facilities.	Site 1 – Normal Capacity – 50% (13 consoles) Site 1 – Surge Capacity – 60% (16 consoles) Site 2 – Normal Capacity –10% (3 consoles) Site 2 – Surge Capacity – 20% (5 consoles) Site 3 – Normal Capacity –10% (3 consoles) Site 3 – Surge Capacity – 20% (5 consoles) Site 4 – Normal Capacity –10% (3 consoles) Site 4 – Surge Capacity – 20% (5 consoles) Site 5 – Normal Capacity –10% (3 consoles) Site 5 – Surge Capacity – 20% (5 consoles) Site 6 – Normal Capacity –10% (3 consoles) Site 6 – Surge Capacity – 20% (5 consoles)

Some high-level observations of the current environment for concept discussion are noted below.

- None of the current facilities can support scenario A or B without modification.
- None of the current facilities can support scenario C or D without modification in relation to the required surge capacity to perform in a backup capacity.
- None of the current facilities can serve in the “primary” larger site role in any option without modification.
- The planning team, MCP, and FGM should develop a comfortable expansion number to consider in the detailed implementation plan—one that would allow for the inclusion of other potential partners in Lake County, if not countywide—who are not participants. This will be challenging as limited data may be available for this analysis.
- The workgroup began an additional analysis based on site visits to neighboring PSAPs for comparison based on the following (See Figure 6):
  - Assume three PSAPs under one agency in a 50 percent/25 percent/25 percent call-volume spread
  - Potential to decrease the number of call-takers with a cascade down to fire/EMS dispatchers and then Law Enforcement Agencies Data System (LEADS) operators
  - Law enforcement channels can have a primary and/or backup telecommunicator

Table 21: Facilities Strengths, Opportunities and Challenges

Strengths and Opportunities	Challenges
The Consortium has significant opportunities to explore with the potential greenfield and expansion (building) sites that have been offered by participants and the County.	Although many of the facilities have room for expansion, it is limited and will require modification at each facility.
	The average age of the facilities in Lake County is 29.63 years. A majority have been updated within the past 15 years; however, the overall age of some of the facilities could lead to additional modification costs to bring them up to current code.

3.6 Technology

The shared systems that are in place or planned set the foundation for, at minimum, the virtual consolidation of PSAP technology, which is the first step toward physical consolidation. Consortium members acknowledge that new systems may need to be implemented in a phased approach because some end-of-life systems may need to be replaced ahead of a consolidation. This phased approach can start to provide benefits for participants well before any final consolidations take place. During the data collection process, participants were asked to rank his or priorities for system upgrades or replacements. Six of the eight PSAPs ranked CAD as its first or second priority, followed by 9-1-1 CHE.

3.6.1 CAD and Associated Systems

It is assumed that all PSAPs participating in a consolidation eventually would migrate to the same CAD system a result of virtual or physical consolidation. Three of the PSAPs—Gurnee, LCSO, and Lake Zurich—indicated that CAD was their number-one technology replacement priority.

The fact that the Lake County ETSB CAD system is already shared, and that a CAD-to-CAD solution was procured, is a positive step that provides some strengths and opportunities even in the current environment.

The RMS and JMS in place are not essential to the core operation of a PSAP. However, they are a part of the overall public safety software “ecosystem”—CAD, RMS, and JMS often share data with each other. These factors likely will impact stakeholder decisions surrounding the procurement of new CAD systems. However, it also should be considered that these systems may need to be funded out of separate “siloed” sources—ETSB and surcharge funding will be restricted to support the procurement of the CAD elements, while other sources of funding may exist for the other components, such as RMS and JMS. There will be challenges in developing an RFP that delineates the systems where necessary, while still integrating them

technologically—as well as in gathering input from the diverse stakeholders. These challenges will add to the complexity of the procurement process, and the stakeholders likely will benefit from an RFP process facilitated by a third-party expert.

MCP's experience in CAD procurement has shown CAD costs to be in the range of $75,000 to $100,000 per seat. It is MCP's experience that smaller, individualized systems tend to be on the higher end of that scale because there is a baseline cost of hardware, maintenance, and interfaces that will exist no matter how many seats are in the system. MCP provides rough order of magnitude pricing for replacing CAD systems in the current environment (both as a shared system and individual systems).

Table 22: CAD System Costs

Current Environment – Standalone	Current Environment – Shared
$5,700,000 (57 positions at average $100,000/position)	$4,987,500 (57 positions at average $87,500/position)

3.6.2 CHE

Three of the PSAPs—CenCom, Vernon Hills, and Waukegan—indicated that CHE was their number-one technology replacement priority. Of note is that the Vesta Pallas system at CenCom has been marked as end-of-life by the manufacturer. Given the fact that the Lake County ETSB call-handling system is the most built-out system in the county—as well as the only shared solution—it likely would serve as the most cost-efficient system to which PSAPs could migrate. However, those PSAPs may not be willing to invest in any major upgrade without confirmation going forward that their investment would be part of the chosen end state.

During the data collection process, MCP identified several deficiencies in call-handling MIS reporting capabilities that prevented the Consortium from obtaining accurate statistics for some key areas used in PSAP management. This is another benefit of a shared call-handling platform and would provide PSAP management with more actionable data as well as a real-time picture of current activity.

3.6.3 Radio Communications

The participating PSAPs operate a mix of Zetron and Motorola radio consoles. Depending on the location of the consolidated PSAP(s), the expansion capabilities of the console systems would need confirmation. The concept of operations should plan for one console vendor to achieve economies of scale for any consolidation. This also will provide an additional level of continuity of operations in the various backup configurations that will be considered.

ASSUMPTION

The planning team has assumed that partner law enforcement agencies will support STARCOM21 as their standard radio system.

The Consortium entities generally agree that STARCOM21 should serve as the standard radio system for consolidated law enforcement dispatch operations, because of its ability to provide interoperable communications with agencies outside of Lake County during multijurisdictional incidents. However, fire/EMS agencies have been slower to adopt STARCOM21 than law enforcement entities. This is largely due to the cost of subscriber units—but also due to concerns regarding the use of digital and trunked radio systems in a structural firefighting environment.

Some fire service users, especially during the early migration to digital and trunked systems, raised valid concerns about the audio quality of digital communications versus analog communications, as well as the coverage afforded by trunked systems, especially in buildings. Research of these issues often has shown that the concerns were in areas where older digital technology was being used, where systems not designed for in-building coverage were being used, and where operational enhancements—such as the use of simplex fireground frequencies—were not being considered. A system that is properly designed according to national standards and best practices, with adequate coverage accommodations and the availability of simplex operational channels, will alleviate all of those concerns.

It has been shown that fire service entities seeking grant funding for subscriber radios generally are more successful when they proceed collaboratively rather than individually. For example, in neighboring Kane County, a group of fire/EMS agencies received one of the largest Federal Emergency Management Agency (FEMA) Assistance to Firefighters grant awards to date to fund the migration to STARCOM21.

3.6.4 Network Connectivity

Like many communities, it appears that the networks in Lake County have been built out, over the years, to support specific applications both in the PSAPs and in other aspects of county and municipal government. Because most of the equipment procured for PSAPs has been standalone, until recently, there has not been a prevalent need for a dedicated network between the various PSAPs. As evidenced by the Lake County ETSB's fiber project, if there is a need for shared CAD, call handling, or logging recorder, the need for connectivity and bandwidth would follow immediately after.

Some initial data collection regarding networking was performed during the development of the project data book. MCP had initial discussions with the 9-1-1 coordinator of the Lake County ETSB as well. These discussions and the initial data collected indicate that a vast array of fiber-optic and microwave resources exist among the partners, as well as with other allied agencies throughout the county. For instance, some research into the Lake County PASSAGE camera system indicates that the system has a significant fiber-optic and microwave footprint in the county. Additionally, the system is connected into the PSAPs. There

have been successful build outs of ESInets to support public safety applications—like the ones that Lake County would benefit from pursuing—that leverage these types of partnerships that span across disciplines, government functions, and even traditional public-private boundaries.

MCP is confident that a comprehensive inventory project and the development of a network plan that is aligned with the migration of shared systems would yield cost and interoperability benefits.

Lake County, given its demographics, size, and proximity to Chicago, will not have some of the same challenges in finding resources that rural communities face when attempting to build out broadband networks for the general public or public safety. However, with availability of these networks comes competition for use of them.

3.6.5 GIS and NG9-1-1

A primary concern within the GIS workgroup involves dual addresses that occur within some of the unincorporated areas of the county. Approximately 3,000 properties essentially have two addresses: one used by the County for addressing and tax records and one used by the United States Postal Service (USPS) for local mail delivery. A letter and resolution regarding the use of one address for these properties was submitted in April 2019 for review and approval by the County board.

The group also identified the lack of a common governance model that would enable GIS data sharing between jurisdictions.

Table 23: Technology Strengths, Opportunities and Challenges

Strengths and Opportunities	Challenges
The existing CAD-to-CAD software is a positive step in providing improved situational awareness in the current environment.	Costs of interfaces, maintenance, and backroom hardware are higher due to duplication of disparate systems.
Relationships and collaboration that have been started by the Consortium through workgroups and this project can be leveraged to form the foundation for regional CAD governance.	Differences between systems—even utilizing CAD-to-CAD interfaces—increases risk for issues related to call transfers.
Entities with an immediate need for new CAD capabilities can serve as early adopters, which allows the initial CAD governance group to be manageable.	Difference in system provisioning (event codes, status codes, policies) makes interpretation of consortium-wide data difficult.
The Lake County ETSB network has been built out and is successfully allowing the sharing of CAD, CHE, and logging recorder systems.	The Lake County ETSB network has limited bandwidth for additional applications.

Strengths and Opportunities	Challenges
Lake County should have access to multiple private and public partners to explore network sharing opportunities.	There is not a common GIS governance and data-sharing model.
Lake County already is using the NENA-developed NG9-1-1 schema.	Three entities have an immediate need to replace their call-handling systems.
Development of a network inventory aimed at preliminary analysis of the concept of a consortium ESInet is possible through the collaboration occurring on the GIS and technology committees.	One entity has an end-of-life call-handling system.
	Reconfiguration of call-handling solutions must be done in coordination with concept of operations.
	PSAPs with immediate need to replace CHE require guidance on facility options chosen.

4 Concept of Operations

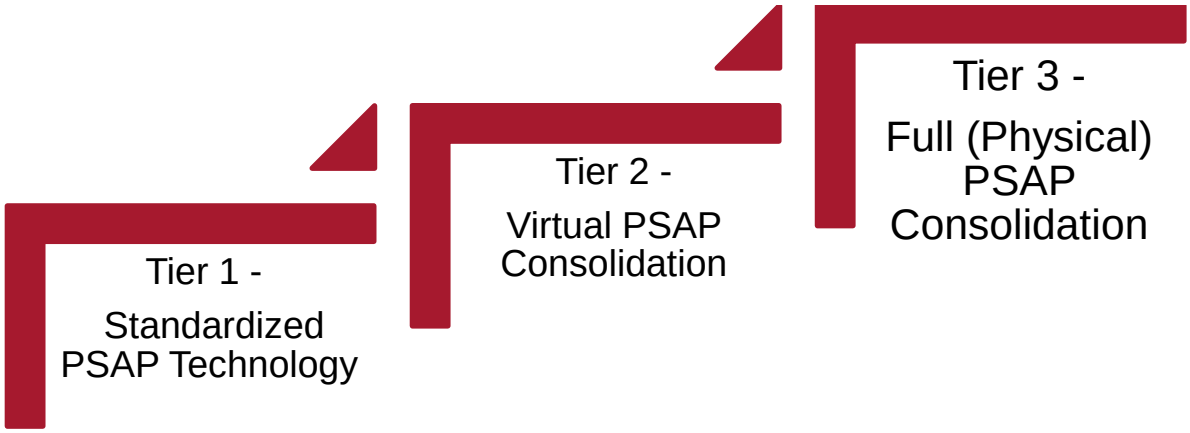
The analysis of the current environment identified specific decisions for which the planning team requested approval from the operations and policy committees. Once these concepts were approved, the project team worked with the Consortium through its project manager to further develop a detailed project implementation plan.

This detailed plan allows for a prompt start to implementation in 2020. It is understood that certain opportunities have arisen that will advance certain areas of focus earlier than 2020.

Over the course of the initial phases of discussions among the partners, several concepts for planning decisions were proposed regarding planning horizons, assumptions, governance, facilities, operational focus, and technology. Based on feedback and partner concern from the Consortium, these options were reviewed, updated, and restructured. The planning team sought three specific decisions that will provide a framework for future planning:

- Approve concept of operations guidance using a three-tiered approach.
- Approve technology scope to include RMS and JMS
- Approve RFP for consultant to support the RFP development and procurement process

4.1 Three-tiered Concept of Operations



A three-tiered concept of operations was proposed to improve 9-1-1 and emergency dispatch services and provide lasting value through efficiency and effectiveness. Keys to success are maintaining an open and transparent dialogue during the planning and consolidation process, while establishing a coordinated consolidation instead of a competitive consolidation environment.

The three concept of operations tiers are mutually exclusive in that each individual partner decides if and when it participates in planning and execution of each tier. The tiers do not need to occur in order, although

Tier 1 requirements can support Tier 2. The operational concept for each tier is discussed below. Gold highlighted text in the tables are the main areas of effort and resources within each tier.

When evaluating the overall impact on 9-1-1 and emergency dispatch within each tier the planning team considered the following.

- How does each tier improve service?
  - Improve getting the right public safety resources, to the right place, with the right information, in the shortest amount of time
  - Decrease call transfers
- How does each tier decrease capital costs (facilities & technology)?
- How does each tier decrease personnel / staffing costs?
- What does each tier do to the competitive environment?

While the partners and workgroups have determined the tiers to attain consolidation in Lake County, there are various differences between consolidation, co-location, and shared services. *9-1-1 Magazine* published an article that provides good information regarding PSAP-consolidation types, which are identified below.

> ***Full consolidation:*** *All existing dispatch services are moved to a single dispatch center with a single management structure. A consolidated center requires diverse centers to be brought together under one management team with common operating platforms. While full consolidation often has the largest start up costs (initial investment) it typically provides the greatest long-term cost savings.*
>
> *A consolidated center offers many advantages:*
> - *employs common electrical, HVAC, and emergency power subsystems*
> - *employees may be cross-trained*
> - *employee schedules may be combined for added personnel efficiency*
> - *flexible arrangements may amplify the commonalties in fire and medical dispatch*
> - *better interagency information sharing*
> - *elimination of duplicate services*
> - *opportunities to pool financial resources to fund system upgrades*
> - *increased ability to communicate between agencies*
> - *more efficient dispatch collaboration for fire and EMS*
> - *potentially, a more cost effective overall solution*
>
> *Several technical issues that must be addressed with a full consolidation: 911 equipment, administrative telephones, Computer Aided Dispatch (CAD), Records Management System (RMS), and recording equipment. The 911 equipment must be sized for the consolidated dispatch operation. The telephone workstations themselves must also accommodate the larger number of 911 and non-911 lines.*

A single CAD … operating platform for the consolidated 911 operation is a necessity. Any new CAD must feed multiple records management systems. This single CAD must be able to upload into the various records management systems and be sophisticated enough to handle the call volume and dispatch functions. A consolidated center requires a single recording system capable of handling the consolidated load. These factors necessarily limit the number of CAD vendors, RMS vendors, and equipment vendors available because smaller vendors are not able to handle the increased capacity [sic]

Co-located consolidation: *In this scenario, multiple dispatch centers are moved to the same physical location, but maintain separate operations. Often, this type of consolidation will bring together all of the agencies into one center located in the same building. The different operations share some of the infrastructure costs, but they remain separate in their dispatch responsibilities. This type of configuration is often driven by diverse dispatch needs in the individual communities.*

In a scenario where 911 centers are co-located with separate operations, there is the potential (though not the requirement) to share some common equipment, such as the CAD system, RMS and radio equipment and maintain multiple 911 switches. The CAD and recorder systems in this scenario may also remain separate. The most challenging issues, however, usually involve personnel: parallel staffing for each agency, with multiple, separate schedules, pay scales, leave policies, and supervisors may prove inefficient.

Shared services: *The major services are shared among multiple agencies. Typically, this includes the CAD, 911 Customer Premise Equipment (CPE) Automatic Number Identification / Automatic Location Identification (ANI/ALI), logging recording, Geographic Information System (GIS) mapping, and possibly the RMS system. In some cases, it may also be preferable to share radio system resources. In this scenario, critical systems are maintained in a single location, and all dispatch centers access them via an IP network. This environment requires redundant, reliable high-speed connectivity between the shared services location and each dispatch center.*

Additionally, the agencies may agree to use a common CAD, RMS and radio console vendor. In this type of shared services environment, many of the dispatch centers may maintain their own CAD and RMS servers but choose a configuration that facilitates a common operating picture, which enables them to see all emergency response assets. A key advantage of this approach is the opportunity to share equipment costs and to reduce purchase and maintenance costs. In addition, shared technical support may increase interoperability and operational awareness.

One disadvantage of the shared services consolidation may be duplication of personnel and management, but our experience is that personal preferences and political realities may not support consolidation beyond this shared services approach.[5]

[5] AECOM Consolidated Dispatch Centers. 9-1-1 Magazine, June 2011.

4.1.1 Tier 1 – Standardized PSAP Technology

Tier 1 is defined as independent, geographically separated PSAPs agree to operate some or all of the same 9-1-1 and emergency dispatch systems/technology, a parallel, coordinated path to standard shared RMS and JMS. This provides:

- The opportunity to address multiple public safety concerns, across multiple agencies
- The opportunity to provide new and expanded technology capabilities
- A key step to “virtual consolidation”
- An “on-ramp” for new partners and expansion of shared services
- For the multiagency Consortium to grow quickly to meet expanded mission
- Cost savings on technology procurement and maintenance contacts

The Tier 1 workgroup functions are detailed below.

Table 24: Tier 1 Workgroup Functions

Workgroup	Function/Roles/Focus
Program Management	• Individual PSAP manages own programs • Use existing external coordination structures and entities (user groups, etc.)
Decision-making Structure (Governance)	• Individual PSAP process and structure
Finance	• Individual PSAP or local ETSB funding
Facility	• Individual PSAP manages facility
Operations	• Individual PSAP policies and procedures
Personnel / Staffing	• Individual PSAP hiring, benefits, training, and employee programs
Technology	• Purchase same CAD, CHE, radio consoles, recording system, etc. • Support a parallel, coordinated path to a single shared, scalable, integrated, enterprise CAD, mobile, RMS, and JMS (expanded scope) • Participate in user group structure
GIS	• Participate in NG9-1-1 GIS workgroup

Workgroup	Function/Roles/Focus
Data Collection	• Opportunity to standardize data collected

4.1.2 Tier 2 – Virtual PSAP Consolidation

Tier 2 is defined as independent, geographically separated PSAPs that operate as a single entity through shared technology, policies, and procedures formalized in an IGA between PSAPs.

The Tier 2 workgroup functions are detailed below.

Table 25: Tier 2 Workgroup Functions

Workgroup	Function/Roles/Focus
Program Management	• PSAPs sign IGA defining requirements, cost, and decision-making structure • Option: Hire small staff to manage consolidated aspects of program
Decision-making Structure (Governance)	• Technology and operations decisions made by committee of partners
Finance	• Individual PSAP or local ETSB funding • Cost sharing of expenditures supporting virtual consolidation
Facility	• Individual PSAP manages facility
Operations	• Standard policies and procedures • Standard accreditations
Personnel / Staffing	• Individual PSAP hiring, benefits, and employee programs • Standard training program • Option for TCs to “fill in” at other PSAPs
Technology	• Purchase same CAD, CHE, radio consoles, recording system, etc. • Network connectivity required between all participating PSAPs • Support a single shared, scalable, integrated, enterprise CAD, mobile, RMS, and JMS

Workgroup	Function/Roles/Focus
	• Purchase same CAD, CHE, radio consoles, recording system, etc.
GIS	• Participate in NG9-1-1 GIS workgroup
Data Collection	• Standardize data collection and reporting

4.1.3 Tier 3 – Full (Physical) PSAP Consolidation

The Tier 3 outcome is a decrease in the total number of PSAPs. In Tier 3, a single entity or agency is formed through an IGA between members that operate one (or more) physical PSAP(s). There could be more than one consolidated entity or agency.

The Tier 3 workgroup functions are detailed below.

Table 26: Tier 3 Workgroup Functions

Workgroup	Function/Roles/Focus
Program Management	• Municipalities and FPDs sign IGA defining relationships, requirements, cost, and decision-making structure
Decision Making Structure (Governance)	• Decisions made by board or committee comprised of partner representatives
Finance	• Members pay according to funding formula • ETSB/JETSB monies directly support
Facility	• Lease / own facility or facilities
Operations	• Standard policies and procedures • Standard accreditations • LE and Fire/EMS Operations Committees
Personnel / Staffing	• Single hiring, benefits, and employee program • Hire staff to manage a consolidated center(s) • Standard training program
Technology	• Purchase single CAD, CHE, radio console, recording system, etc.

Workgroup	Function/Roles/Focus
	• Network connectivity required with partners and backup PSAP • Support a shared, scalable, integrated, enterprise CAD, mobile, RMS, and JMS
GIS	• Participate in NG9-1-1 GIS workgroup
Data Collection	• Standardized data collected and reporting

4.2 Technology Decisions

Option 1: ***(APPROVED)*** Expand Consortium (technology workgroup) mission to include coordinating / leading efforts to move toward a shared, scalable, enterprise public safety database(s) • Shared / 100%-compatible CAD, RMS, and JMS • Single consortium-wide CAD by 2025 • Single, shared GIS database
Pros: • Opportunity to address multiple public safety concerns, across multiple agencies • Key step to "virtual consolidation" • Provides "on-ramps" for new partners and expansion of shared services • Multiagency Consortium can grow quickly to meet expanded mission Cons: • Increased complexity • Increased cost for consultant to write and support a comprehensive RFP • Possibly extends decision timeline • ETSBs may have concerns about expanding the mission
Way Forward: 1. Decide on funding for consultant drafting RFP 2. Write and release RFP for consultant to draft CAD, RMS, and JMS RFP 3. Define RFP review teams and timeline

Option 2: Approve goal that all participating PSAPs will be on the same / standard CAD system by 2025 (technology workgroup recommends hiring consultant to support RFP for CAD)
Pros: • Key step to virtual consolidation • Provides on-ramps for new partners • Less complex than addressing CAD, RMS and JMS together Cons: • Limited opportunities for information sharing because it is CAD only
Way Forward: 1. Decide on funding for consultant drafting RFP 2. Write and release RFP for consultant to draft CAD, RMS, and JMS RFP 3. Define RFP review teams and timeline

To support the approved concept of operations and expanded technology scope that included RMS and JMS, the Consortium approved the hiring of a consultant to research and draft an RFP for a shared, scalable, integrated, enterprise CAD, mobile, RMS, and JMS.

4.3 Additional Recommendations

This section presents recommendations to the Consortium of concepts specific to each area that should be detailed further in the next phases of the PSAP consolidation plan.

4.3.1 Non-core Functions

Stakeholders will need to address the non-core functions identified in Section 2.1.1—either directly or through working with other stakeholder groups that have greater operational responsibility concerning these functions.

Although the solution to many of these dilemmas will lie with the individual agencies, it is acknowledged that the consolidation efforts would benefit from its success. The Consortium should continue to provide a cooperative environment that fosters discussion and solution of these dilemmas.

- The Consortium can serve as the vehicle for members to discuss and negotiate with outside entities, such as the law enforcement and fire service committees and large alarm companies.
- The Consortium can continue to provide a forum for members to collaboratively share best practices regarding solutions to these problems.

- The Consortium can investigate and disseminate information to members regarding how these dilemmas have been solved in other areas that have consolidated, through neighboring counties, and parties such as MCP and trade organizations.
- As part of consolidation planning, the policy and operations committees should address the long-term plan for monitoring alarms and to what extent it should continue to be a function of a consolidated PSAP(s). For some PSAPs, this function generates revenue for the center. If the function continues, planning will need to consider how alarms are transmitted to the consolidated PSAP(s). Municipalities also need to consider rewriting their alarm-monitoring ordinances and agreements prior to consolidation.
- Although not a direct PSAP function, stakeholders could consider a coordinated 3-1-1 system or the use of telephone auto-attendant features to address this issue, enabling municipalities to focus on PSAP consolidation. The Consortium also should establish a dialogue with any entities, such as the United Way, that are interested in forming a 2-1-1 solution in Lake County. This also can help to reduce the amount of non-emergency calls and provide a place for the calls to be processed instead of a local PSAP.
- Any consolidated PSAP in the county should be capable of activating the emergency sirens. This will require coordination with the Lake County Office of Emergency Management regarding its public warning and communications plan.
  - Any 24-hour warning point in the county should be capable of viewing the cameras available in its jurisdictional footprint.

4.3.2 Call Transfers

Until the end state is realized, Lake County can benefit from the synergies that have been established by the Consortium by having the operational procedures workgroup establish measures that can improve the call transfer situation in Lake County.

- The workgroup should Investigate ways to better track call transfers, allowing QA and GIS personnel to jointly review to determine whether there are ways to reduce the transfers.
- Consortium members could implement common codes in CAD or CHE systems that will allow for better tracking of call transfers.
- The workgroup could develop a reporting process for incidents whose outcome was impacted negatively by a call transfer, to allow for QA personnel to perform a detailed investigation of the incident.

As shared systems are explored and developed, the concept of reducing call transfers or improving the data exchange that occurs with them should be a top priority for the technology workgroup.

4.3.3 Governance/Decision-making Structure

The participating entities, through the established governance workgroup, have reviewed the various options for decision-making and recommended an end-state solution of an independent public safety agency that operates the joint communications system for the mutual benefit of its members. MCP concurs

with this concept. MCP's recommendations regarding decision-making support for the consolidated PSAP(s) is detailed below.

General Recommendations

Any future reconfiguration will need to enhance the level of governance, at a minimum, or surely will be met with resistance from the stakeholders of each entity. Governance is often a top concern for project stakeholders. Because a PSAP consolidation or other operational reconfiguration often changes organizational and reporting structures, employees, supervisors, administrators, first responders, and elected officials all are concerned— justifiably—as to whether they will have an appropriate opportunity to be engaged in the governance of the consolidated or reconfigured center. Stakeholders need to know that their concerns will be heard and addressed and that their questions will be answered by the new or reconfigured organization.

It is possible that the ETSB makeup could be reconfigured to allow the inclusion of all PSAP stakeholders in a way that enhances governance—ultimately involving the ETSB in the operational aspects of the PSAPs. Illinois' Emergency Telephone System Act permits ETSBs to fund the design, implementation, operation, maintenance, or upgrade of wireless 9-1-1, E9-1-1, or NG9-1-1 emergency services and PSAPs. However, MCP concurs with the concept of establishing an independent entity that would oversee the operation of the participating PSAPs during and after the transition. MCP believes that the size and complexity of any potential end-state configuration will dictate the need for a separate public safety entity to handle the oversight, governance, and funding of the PSAPs. The ETSB (or ETSBs) would work in parallel in areas such as the development and selection of shared systems and services (e.g., NG9-1-1) but the direct management and oversight of the PSAPs would fall under an independent entity or entities.

If the participating ETSB or ETSBs are directly funding the independent public safety entity, a case could be made to offer them a seat on the board. Consider, however, that the ETSB already has a significant amount of influence outside of the regional board of directors because it is determining the disposition of a significant amount of funding, identifying key systems, and shaping countywide 9-1-1 policy. It is common, however, and MCP recommends, that the consolidated public safety agency that oversees the PSAP(s) be included on the ETSB. This is the case in many of the counties in Illinois in which MCP has worked.

Aside from any actual voting governance authority, MCP recommends that the overall governance board of the independent entity is supplemented by subordinate boards for operational or discipline-specific oversight. Sample committee structures that could be considered include the following:

- Discipline-specific (law enforcement, fire service/EMS)
- Finance
- HR/Personnel
- System-specific (radio, CHE, CAD)

During the development of the governing board, the stakeholders should consider several factors regarding the makeup and voting structure.

Board with voting member per participating jurisdiction

This option is sometimes met with resistance from larger entities. Some report that they believe their vote is minimized because a smaller entity has the same influence. However, MCP has seen similar arrangements that have worked quite well regardless of the size of each community as challenges and problems are all relative.

One of the other challenges specific to how such a governance board would be in Lake County, would be the sheer size of it. For consideration, if the governance concept were to be set up by "participating agency:"

- There are 27 law enforcement agencies in the consortium's footprint
- There are 19 fire/EMS agencies in the consortium's footprint
- There would be 46 agencies that require a vote on the governance board

If the governance board were to be set up by municipality, there would be 26 agencies.

Board with voting members based on a similar model to the cost model (e.g., population, call volume, resources)

In other counties this model is modified to have smaller agencies "share" a vote. This can be met with resistance from smaller entities that may believe they are making a sizable contribution (in their eyes) but do not have equal influence.

However, if only two or three agencies wish to pursue consolidation, other decision support structures may be more applicable. There are essentially three types of boards or committees that could be established to represent a few jurisdictions and their respective agencies: an executive board/committee; an advisory board/committee; or a steering committee. A hierarchal relationship also may be established between two of these or among all three.

Executive Board

An executive board can help to make a larger voting board of directors more manageable. An executive board/committee typically is formal, with full decision-making authority, and is the responsible entity. The roles of the board members are spelled out in bylaws, as are the processes for electing and removing members. Board members are accountable to the stakeholders, in this case the public and emergency response agencies, regarding the 911 center's performance. The board may be responsible for approving the 9-1-1 center's budgets. The board is intended to represent the 9-1-1 center's best interests and may make strategic planning decisions. Some tasks that could be offloaded to an executive board include the following:

- Personnel matters and direct integration with any board appointed staff
- Initial liaison to subcommittees to determine certain items that may not require full board action
- Development of IGAs

There will be other "allied" organizations whose collaboration is required for the success of the consolidated 9-1-1 system. Examples would be police and fire chiefs' associations, representatives from

finance experts (as is the case with the financial workgroup), allied social services, 2-1-1 and 3-1-1 champions, and even the ETSB as mentioned before. One method that could encourage participation is by establishing the organizations as non-voting representatives to the governance board. They should be encouraged to participate in discipline-specific workgroups and subcommittees as well. This will allow input and collaboration to be solicited without making the actual governance board—through an executive board—to be unwieldy.

The participating entities have already taken great measures to establish a Consortium that provides many of the requirements outlined in the above summary. It is quite possible that the Consortium serves as the baseline for the establishment of the governance board, and its workgroup structure could be enhanced as the need intensifies during implementation.

Other Structures

An advisory board/committee is informal and is created on behalf of the 9-1-1 center. This governance model focuses on the board's supportive role as one of providing strategic advice to management. Board members have no accountability for the 9-1-1 center's performance, only the quality of its advice. An advisory board can make decisions, if so empowered, whereas an advisory committee generally has no decision-making authority. However, the informal nature of an advisory board provides greater flexibility in terms of structure and management.

A steering committee is a body of high-level advisors tasked with governing an organization and providing it with guidance and direction. A steering committee often is responsible for creating workgroups and choosing the right experts to complete a project or program. A steering committee provides guidance regarding strategic direction and can set overall operational parameters. A steering committee assists in operations-based decision-making. A steering committee can make policy decisions that affect operations as a whole, as well as provide budget reviews. Authority and responsibility fall between that of an executive board and an advisory board.

ETSB Structure

There are several challenges that will arise during efforts to unify the ETSBs. The combination of the ETSBs surely will create challenges regarding timing, membership, disposition of funds, and recurring expenses that will need to be addressed.

In contrast, the combination of ETSBs likely will create benefits that more effectively use available funding in Lake County in the form of shared systems and functions, better trained and utilized personnel, and development of countywide standards for the municipalities and consolidated PSAP(s) to follow.

Lake County should work toward eliminating multiple ETSBs. It is likely that this will follow the path of the PSAP configuration; however, it should be noted that it would be beneficial and quite realistic to allow for the consolidation of ETSBs before PSAP consolidation occurs. Regardless, any consolidation plans are being developed under the assumption that a unified funding source, through ETSB funds, will be available for the eligible costs associated with the implementation of NG9-1-1 technology.

The end state should focus on the role of the ETSB, which should align with the recommendations set forth in the state's Emergency Telephone System Act. Although the act does allow for the ETSB to have potentially more oversight into the operations of the consolidated PSAP if the participants so wish—these responsibilities likely would be too complex and unwieldy to create an ETSB-type entity that would have sole oversight of the consolidated PSAP.

Rather, MCP recommends that a goal be set for a unified ETSB structure that is created in conjunction with a joint public safety entity and would work collaboratively to oversee consolidated PSAP(s) operations, with roles identified by an IGA. The IGA should allow for cross-pollination of members, ensure adequate representation countywide, and clearly delineate the responsibilities of the public safety entity versus the ETSB. The table below identifies some sample responsibilities of both the ETSB and the joint public safety entity.

Table 27: ETSB and PSAP Governance Entity Sample Responsibilities

ETSB Responsibilities	PSAP Governance Entity Responsibilities
Technology – Design, procurement, and ongoing maintenance of key technology systems (e.g., radio, CHE, CAD, NG9-1-1)	Technology – Design, procurement, and ongoing maintenance of dispatch-related or ancillary technology (e.g., protocols, fire and security alarm alerting, prisoner detention)
Operations – Development of standards and protocols related to call handling to establish a baseline level of service to be offered in Lake County	Operations – Direct operation and supervision of PSAP implementation of ETSB-recommended standards
Workforce Considerations – Development of minimum staffing levels to achieve desired call-handling benchmarks	Workforce Considerations – Direct supervision of employees (hiring, termination, retention), union negotiations, scheduling, and staffing to achieve ETSB-desired call-handling benchmarks
Workforce Considerations – Employment of administrative personnel to assist in ETSB responsibilities (e.g., countywide 9-1-1 director, technical staff for functions such as GIS)	
Financial Considerations – Oversight of state-provided funding and network costs	Financial Considerations – Oversight of funding received from stakeholder agencies for direct operations of PSAP(s) through cost-sharing model

The Consortium will need to take into consideration some factors during the consolidation of ETSBs.

- The order in which ETSBs could be combined based on the projected ongoing operation of the PSAPs they serve. Certain changes will require modification waivers and plans to be filed with the State of Illinois.
- Development of a modular governance structure for ETSBs that allows additional ETSBs to be incorporated during the consolidation.
- Reviewing the Emergency Telephone System Act for considerations that must be taken if the newly formed ETSB is in a different size/classification than the previous ones.
- Disposition of funds and consideration for recurring costs that each ETSB is managing.

4.3.4 Financial

The planning team has assumed that funds will be available from a more unified ETSB configuration to procure standardized, shared 9-1-1 technology for the PSAPs. The detailed transition plan should be developed to account for all costs associated with the transfer of operations to the consolidated entity. Some of the costs to consider:

Construction costs of the new PSAP(s) and expansions to PSAPs being repurposed.

Systemization costs which include the necessary systems for the continued operation of the PSAPs during the transition. Prior to the start-up of the consolidated operation, decisions are made regarding what will transition to the new location and what will be provided new. Some systems are necessary, such as the phone lines/trunks used for 9-1-1 call delivery and transfers to surrounding agencies. These lines very well may need duplication to allow for a smooth transition from one facility to the other. Once the transition has been completed and the system has been up and running, the duplicate lines can then be eliminated.

Transitional staffing expenses for duplication of staff during transitions and additional training effort necessary for new facilities and systems.

Legal and professional fees necessary as part of the transition

The financial workgroup should establish a budget/financial template—utilizing the effort done to date—that will be used to track the financial aspects of a consolidation.

To support the establishment of a fair and equitable method of funding 911 services in the consolidated public safety agency, the transition plan will need to include selection of a predictable and fair funding model. However, much effort needs to be completed before a final selection can occur. It is MCP's recommendation that the members, through the financial committee, continue to familiarize themselves with the potential models that are available. There are other factors that associate risk with a premature decision regarding the funding model:

- The need to complete the financial summary information of the project data book, including current costs in place

- Unknown variables regarding the cost of implementing the shared systems, a more accurate staffing model, and construction costs associated with the consolidation

While not a challenge that hampered efforts so far to develop a detailed planning concept, at some point it will be beneficial for the planning team to understand the current cost-sharing models in place within the Consortium—especially as a cost model for the consolidated entity is starting to be analyzed and discussed.

Once these risks have been mitigated through the finalization of the transition plan and implementation of measures outlined in this concept of operations, the Consortium should evaluate the models described below.

Population

The population-based cost-allocation model involves assessing a share of operational costs based upon the population within each jurisdiction. Using this method, member jurisdictions would be assessed a portion of the operational cost on a per-capita basis. The projected operating budget is divided by the total population to determine an average per-person assessment. While several adaptations of a population-based model are possible, this model may be more suitable in areas where population data and response agencies are defined clearly by municipal boundaries.

Activity Volume

Cost assessment based upon activity is a common method that is used to fund shared services communications centers. Routine communications center activities may be tracked and documented including:

- Incoming 9-1-1 calls
- Incoming 9-1-1 and seven-digit calls
- Dispatched incidents
- Field-originated incidents
- Radio transmissions

Activity-based costs can be derived using two methods. The first involves tracking the activity volume associated with each member agency. The entity is assessed the cost of provisioning specific services based upon actual use. The second method involves averaging the volume of activity across all participating jurisdictions or agencies. As an example, PSAPs would document the number of 9-1-1 calls received annually. The annual operating budget can be divided by the number of 9-1-1 calls to derive a per-call cost. Each entity then would contribute a share of the cost based upon the average of overall system usage. Since the current environment does not have a lot of shared and common systems, obtaining information aside from call volume to base a funding model on may be difficult in the early stages of the transition.

Maintenance of Effort

In this model, each agency contributes an equal portion of the operating budget based upon the straight division of the total costs among all member agencies. Though rarely used as a standalone model, this model is the most simplistic in terms of cost distribution. The governing entity must determine the basis of the cost allocation, like the activity-based method. MCP does not recommend this model as it does not fairly distribute the costs among the agencies—especially in a larger consolidated entity as is anticipated in the consortium.

Ad Valorem

This method uses the tax valuation of properties located within each jurisdiction as the basis to determine the level of contribution. In Illinois, this likely would be done utilizing the equalized assessed value (EAV), which is the application of the state's equalization factor to the assessed value of a parcel of property. Tax bills are calculated by multiplying the EAV (after any deductions for homesteads) by the tax rate. This method fails to account for the taxing overlay of the EMS and municipal jurisdictions. Additionally, some municipalities do not levy a tax on the EAV and subsequently would not have a revenue source to contribute without a push for a local legislative change.

Also, the ad valorem model would not accurately account for activity in the case of a distressed municipality. If there is an area that has a higher than normal call volume due to higher crime or an increased workday population, it may not necessarily be reflected in property values. It is possible in this case to have a suburban bedroom community with higher property values, yet less of a demand for service, paying more than another municipality that has a higher demand for service.

Resource

This method is based upon the number of public safety resources (e.g., personnel, apparatus, stations) that each member agency possesses. This method is based upon the assumption that resources are closely aligned with activity and demands on the communications system.

Hybrid

Any of the methods that have been described so far could be combined, either by discipline (law, fire or EMS) or by jurisdiction if it is advantageous to the governance body. For instance, St. Clair County, Illinois, employs a hybrid of the Activity (call volume) method, but also separates LEADS access charges and divides them among the law enforcement entities (Maintenance of Effort). DU-COMM, in DuPage County, Illinois, uses a three-phased approach. It has a funding formula that considers several factors and divides the funding needs first by discipline (fire or EMS). Then, it uses the Ad Valorem method for FPDs and uses the Resource method for law enforcement agencies. Consortium members have reported that discussions with leaders of DU-COMM acknowledge this, but also caution against as there are challenges associated with the complexity of maintaining an Ad Valorem funding model.

Probably the most relevant factor that should be studied regarding DU-COMM is that it has organized so that the establishment of the funding formula serves under the governance body. This ensures stakeholder input into the development and modification of the formula. In fact, it could be argued that the most important aspect of shared governance is the development of the funding formula.

Another form of hybrid cost-sharing would be to have separate funding models for specific types of shared technologies that could be separate from the governance model chosen by the consolidated public safety agency. This could be an option for the Consortium to consider, especially with the development of shared systems that may be phased in, with different PSAPs joining a shared technology project at a different time. This model has some benefits.

- It is useful when there are shared systems that may be deployed in a PSAP, even though all organizations may not use them—such as MDCs or RMS.
- It tends to distribute costs, specific to a system, in the fairest manner possible—provided that the method of dividing the costs is selected with knowledge of the system being installed.
- It allows organizations not part of the overall governance model to share in a technology project—perhaps an out-of-county PSAP that wishes to share a system with the Consortium. Or during the transition, perhaps a PSAP that has not consolidated yet wishes to participate in a virtual consolidation of technology.

4.3.5 Workforce

Human Resources

Once a governance model is chosen, a key decision point will be the method in which HR support is provided to the consolidated entity. There are two options that could be used by a consolidated entity for support in HR.

- The consolidated entity would hire (or outsource) its own staff to handle functions such as benefits, payroll, recruitment, and other HR functions. Staff would be employees of the consolidated entity.
- The consolidated entity could enter into an IGA with a member municipality, which would serve as the fiduciary agent and would support the consolidated entity through coordinating benefits, payroll, recruitment, and other HR functions. Staff would be employees of the fiduciary municipality.

However, it is likely that the consolidated public safety agency that would be created would be large enough to support the functions above on its own.

During a PSAP consolidation, decisions must be made regarding the HR processes for the newly created organization. The Federal Communications Commission (FCC)'s Public Safety and Homeland Security Bureau has stated, "The sharing of resources allows for the elimination of duplicate costs, supports coordinated responses, provides greater interoperability, and ultimately leads to more effective and efficient service."[6]

PSAPs within the region employ multiple different HR models. An additional factor that confuses this already complicated decision is the presence of labor unions that represent personnel in the various agencies. MCP recommends that the personnel and staffing workgroup initiate tasks that collectively

[6] Key Findings and Effective Practices for Public Safety Consolidation: Final Report. https://transition.fcc.gov/pshs/docs/csric/CSRIC-1A-Report.pdf. Last accessed 4/10/2019.

determine the best course of action to develop an HR model that can serve all entities within the consolidated PSAP appropriately. At a minimum, numerous decisions must be made in this area, including the following:

- Equalizing benefits (vacation, sick leave, retirement, union contracts)
- Equalizing pay, if necessary
- Maintaining seniority (longevity/status)—is grandfathering necessary?
- Retirement plan—are they the same? Is grandfathering necessary?
- Shift assignments
- Scheduling
- Ancillary support positions
- Administrative positions

Personnel Management

One of the backbones of any agency, standalone or consolidated, is its personnel management strategy. A well-conceived plan to address all personnel management issues will go a long way toward assuring staff that they are valued employees. A personnel management strategy that is mutually agreeable to each participating agency should be developed to:

- Improve job satisfaction
- Mitigate employee stress
- Identify ways to improve employee recruitment and retention
- Identify any disparities
- Achieve long-term organizational success

Building on the significant effort that has already been performed in the development of the project data book, a gap analysis of each participating agency's current personnel management strategies, policies, and procedures should be conducted to identify the most efficient and effective organizational structure for the newly created consolidated PSAP(s). The table below identifies the personnel management information that should be reviewed by the personnel and operational policy workgroups.

Table 28: Personnel Management Information Review

Personnel Management Checklist

• All related handbooks, guidelines, and policies related to personnel and operations
• Job descriptions
• Personnel record-keeping
• Compensation
  - Pay scale disparities
  - Paid-time-off disparities
  - Seniority issues

Personnel Management Checklist
- Retirement packages - Union contracts • Staffing promotional opportunities and requirements • Disciplinary process • Counseling services • Recruitment and retention processes to include a comparison of cost for retaining employees versus training new employees - Automatic employment or rehire of existing employees • Health and wellness programs

Hiring Process

Upon completion of the personnel management gap analysis, a final review of the candidate screening, testing, training, and acceptance policies should be conducted to identify disparities between agencies, as well as methods to improve recruitment, retention, and long-term organizational success. A thorough review of the hiring process will enable all participating PSAPs to come to a consensus on a hiring process that best meets the needs of the consolidated PSAP(s), while also adhering to individual locality and Criminal Justice Information Services (CJIS) hiring criteria.

Training

Telecommunicator training is the foundation for all activities within the PSAP, consolidated or otherwise. The table below identifies the current training programs in use at each agency, whether that agency has an initial training curriculum/course that adheres to the *Recommended Minimum Training Guidelines for the Telecommunicator*[7] issued by the National 911 Program in 2016, and whether it utilizes certified communication training officers (CTOs) to conduct the training program.

[7] Recommended Minimum Training Guidelines for the Telecommunicator Section I. https://www.911.gov/pdf/Minimum_Training_Guidelines_for_911_Telecommunicator_2016.pdf. Last accessed 4/10/2019

Table 29: Training Programs

	CenCom	Deerfield	FoxComm	Waukegan PD	Gurnee PD	Lake Co. Sheriff	Lake Zurich PD	Mundelein PD	Vernon Hills PD/CFPD
Initial per Best Practice	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
CTO	Yes	Yes	Yes	NIR	Yes	Yes	Yes	Yes	Yes
* NIR = no information reported									

It should be noted that, given the limited data provided, the following factors remain unclear:

- If the agencies' initial training programs include:
  - Classroom training per the recommended minimum guidelines
  - Attendance at an Association of Public-Safety Communications Officials-International (APCO), International Academies of Emergency Dispatch (IAED), or similar certification program
  - On-the-job training only, following the recommended minimum guidelines
  - Some combination of the above
- If the agencies utilize CTOs to:
  - Conduct classroom training
  - Monitor trainees during on-the-job training
  - Some combination of the above

Within a consolidated PSAP, regardless of the configuration, a standardized training program should be implemented that adheres to applicable national standards and guidelines. To create such a program, a gap analysis be conducted of the training academy, course curricula and materials, and current instructional methods, using the recommended minimum guidelines as the litmus test. A single training program, using a classroom (academy) format followed by on-the-job training with trainees monitored by a certified CTO, is the best way to assure that all telecommunicators within the consolidated PSAP(s) are operating from the same base of knowledge, skills, and abilities. During the gap analysis applicable certifications for all personnel—e.g., EMD, APCO, NCIC, and National Incident Management System (NIMS) Incident Command System (ICS)—also should be identified.

4.3.6 Operations

It will be necessary for the consolidation partners to discuss and then determine the following:

- Evaluation of service delivery—covering all user agency requirements
  - Alarm monitoring
- Standardized dispatch methods
  - Law enforcement workgroup from served agencies
  - Fire/EMS workgroup from served agencies
- New support positions needed (e.g., QA, training, public education)
- Training/cross-training
- Supervision—needs likely will increase
- Shifts/schedules
- Technical training—if equipment is different
- Career ladder
- Skillsets—what is missing?
- Freedom of Information Act (FOIA) requests—who can release information? The consolidated agency? The responder agency?
- Impact on customers
- Support for alarm monitoring

4.3.7 Facilities

Analysis of the current environment—as well as further analysis that was provided previously regarding the staffing and workstation (console)-related calculations associated with the consolidated environment provides a baseline that can be used for a preliminary analysis of the existing facilities and opportunities for expansion or construction. The decision point is for the operations and policy committees to select, ultimately, a target end state based on the analysis, which would define the desired number of PSAPs. This will allow for further planning to remain focused toward realistic options that are evidenced in the analysis.

Given the high-level observations included in the analysis found in the previous section, the table below summarizes some preliminary options for the potential usage of some of the existing PSAPs *without modification and considering the additional space requirements to include backup*.

Table 30: Preliminary Options

PSAP	Potential Usage
CenCom (10-console capacity, 1,440 square feet)	Satellite in E, F, G
FoxComm (12-console capacity, 1,452 square feet)	Satellite in E, F, G
Gurnee (9-console capacity, 1,038 square feet)	Satellite in E, F, G
LCSO (Existing Facility) (9-console capacity, 1,020 square feet)	Satellite in E, F, G
Lake Zurich (8-console capacity, 1,020 square feet)	Satellite in E, F, G
Mundelein (6-console capacity, 900 square feet)	Satellite in F, G
Vernon Hills (8-console capacity, 1,300 square feet)	Satellite in F, G
Waukegan (6-console capacity, 829 square feet)	Satellite in G

MCP recommends that the facility committee continues to use the 165-square-feet per console number that was used by FGM and the IXP report for recommended communications floor size. This is consistent with the figure that MCP uses (including the grossing figure). Further analysis should occur to verify square footage numbers of candidate sites as MCP noted some anomalies in the data reported.

Although a target concept will be chosen from the scenarios described previously, the other concepts can serve as transitional points until the end state is reached.

The County's effort to design and build a shared EOC, Lake County ETSB office, and consolidated 9-1-1 facility provides an advantageous opportunity to design a dedicated PSAP that could serve as the keystone facility of the concept of operations approved by the Consortium. Having at least one facility that is purpose designed to meet all the necessary standards would create great flexibility for the Consortium when selecting the other facilities.

A review of the scope of work for FGM's feasibility study indicates three key areas of focus and delivery that will require regular coordination between the Consortium, its workgroups, and consultants.

- Spatial Needs Development:
- Conceptual Plan Development
- Cost estimation

As the concept of operations is approved and moves towards a more detailed, executable implementation plan, there is a likelihood that additional data or modifications to the details surrounding the approved concept will emerge. The consolidation planning team should provide that data to FGM's team to ensure incorporation into the conceptual architectural plan for the Lake County facility. Likewise, it will be beneficial to the consolidation planning team to know of any challenges learned during the process of developing the conceptual facility design—so that they can be used to adjust course.

The data book and subsequent "Criteria for Initial Review of Proposed PSAP Buildings and/or Property" provides a good initial overview of the facilities available and their potential use in the proposed concept. Once a concept is approved, the path forward regarding the facility aspects of the concept should address other potential risks through the efforts of the facilities workgroup.

- Will the costs, political implications, timelines, and space allocations associated with a proposed Lake County facility at the Libertyville campus make it a feasible option for incorporation as one of the facilities in the proposed concept?

- Once the costs and space allocations are available and deemed as achievable, it should be determined if the proposed concept supports the Lake County facility as a primary facility and whether it should be constructed to serve as the sole "backup" facility for the other facilities.

- Further discussions and negotiations need to determine the lease/ownership arrangement of the PSAP portion of the facility in relation to the County, the ETSB, and the proposed consolidated PSAP governance entity.

- In addition to the initial criteria reviewed, the facilities workgroup should continue to evaluate the potential usage of the candidate facilities to lead to a preliminary, yet confident, recommendation of selected facilities. This recommendation should consider:
  - Proposed lease/ownership arrangement of each facility.
  - Timelines associated with the host agency's integration into the consolidated arrangement.
  - Ability of the facility to handle the capacity expected in the concept of operations, including a high-level analysis of any improvements that would be necessary.
  - Backup and redundancy options in correlation to other candidate facilities in the approved concept.

- Although the Consortium has been established as a collaborative effort that is successfully allowing its partners to evaluate such issues, the maturing of the Lake County public safety facility process may require coordination with partners in Lake County that are not participants of the Consortium. The Consortium and Lake County will need to determine how this will occur.

The facilities workgroup and MCP reviewed several potential options brought forward for a consolidated center. Of those facilities reviewed during the planning phase, there are four facility options, presented in the table below, that deserve consideration.

Table 31: New Facility Options

New Facility Options						
Property	Lease Space	Lease Building	Own Building	Remodel	Build	Notes
Gurnee Police Department	X				X	Village builds a communications center annex to the existing facility
Lake County	X				X	County includes a shared ETSB office, EOC, and 911 center in a new public safety facility
Mundelein Fire Department	X	X	X	X		Lease some or all of the building; would consider selling building
Vernon Hills Police Department	X			X		Lease part of existing building; combined 7,000-8,000 square feet are available

4.3.8 Technology

CAD and Associated Systems

There are three potential CAD models that could be considered to improve the delivery of service in the consortium footprint.

An independent, interconnected CAD system where each PSAP would continue to maintain autonomy over its systems, but those systems are interconnected using transport media such as T1 circuits, microwave links, or an ESInet; this is essentially what is in place today. Some disadvantages of this approach are seen by the PSAPs currently:

- There is complexity in interfacing all CAD elements. Lake County should be credited for its use of CAD-to-CAD technology—but the observations of operations and data and discussions with stakeholders confirmed that it does not provide all CAD elements.
- System monitoring and maintenance, as well as support, becomes more challenging with disparate systems.
- There is a potential for data loss during call transfers between PSAPs.

A cloud-based CAD system is one where agencies would have the option of selecting a private cloud model that is owned and operated by the agency in conjunction with a network operations center (NOC) or data center, or a public model in which cloud space is rented from an owner/operator such as Google, Amazon, or IBM. It is true that 9-1-1 entities have been slow to adopt such solutions to date due to concerns that they cannot meet the mission-critical demands of public safety. However, more clients are beginning to evaluate and select cloud-based solutions because they are scalable and flexible, do not require the PSAP to maintain the equipment, and generally have pricing models that allow them to qualify as recurring operating expenses. Options certainly exist with various vendors, especially in the realm of RMS, that could be considered. However, the risks associated with becoming an early adopter of such technology for an enterprise-grade CAD system in a newly consolidated environment may be too great given the other challenges that Consortium members will be facing in other program areas.

A regional, shared CAD system is one where agencies share a single CAD solution across multiple PSAPs. It should be noted that the concept of sharing a single CAD solution does not necessarily mean that only one server is located in the region. This appears to be the most logical solution to be implemented in Lake County, especially with the priority assigned to CAD replacement for some entities and the opportunity with the LCSO, which is eager to replace CAD and RMS.

Conceptually, MCP recommends a regional shared CAD solution and concurs with the Consortium's vision to implement it by 2025. This is a realistic and attainable goal with a subject-matter-expert-led approach. The system should be built accordingly (size and features) to allow entities that are not early adopters to be able to incorporate into the system as their needs allow.

Some benefits of this CAD model are:

- Enhanced situational awareness among participating PSAPs.
- Simplification of system operation, maintenance, and troubleshooting.
- Common training amongst telecommunicators and the ability for them to perform in another PSAP easily during a backup situation.
- The ability to create universal backup and continuity of operations plans.

There are some challenges with this CAD model.

- Procurement has the potential to be more challenging and time consuming; however, the possibility of the Consortium or Lake County procuring this system as a fiduciary agent can improve this process.

- Governance can be complex as CAD requires various levels of stakeholder input (e.g., users, IT administrators, CAD-provisioning administrators, GIS, mobile users); this may be easier in Lake County's situation because governance is another topic being considered.
- A regional, shared procurement generally takes longer to implement due to multiple partners; however, advanced planning and effort can help to prepare the participants ahead of system selection.

MCP's experience in CAD procurement has shown costs to be in the range of $75,000 to $100,000 per seat. A shared procurement like the one being proposed has the potential to be on the lower end of the scale because often less hardware, interfaces, maintenance, and training are necessary in a shared system. A rough order of magnitude pricing for two PSAP configurations that have been discussed for the end state are shown in the table below.

Table 32: CAD System Costs (Proposed)

Two-facility Model (for reference)	Three-facility Model (for reference)
$4,550,000 (52 positions at average $87,500/position)	$3,850,000 (44 positions at average $87,500/position)

CHE

Despite the disparities and age of some of the call-handling infrastructure, there are transitional measures that should be considered to improve the tracking of call transfers for planning and migration purposes.

By proceeding with virtual consolidation of technology systems, Lake County can build the foundation for physical consolidation. Conceptually, MCP recommends a countywide, shared call-handling solution. A shared call-handling platform is similar to a shared CAD system. Multiple PSAPs (usually known as remotes) can tie into a centralized host, which does not need to be in the same facility. Virtual consolidation or sharing of resources has several positive aspects.

- Cost savings are usually achieved for similar reasons to CAD; less servers and backroom hardware.
- A properly designed configuration with features such as "hot seating"—which allows telecommunicators from one PSAP to log in and answer calls at another PSAP—and geodiversity can greatly enhance a PSAP's capabilities during "disaster" situations that may require the evacuation of a PSAP.
- PSAPs often can reduce the amount of network and trunks going into shared systems.

However, there are some risks that must be mitigated when designing a shared call handling system.

- These systems can be very complex and will require governance, or at a minimum operational policy agreed upon by the participants regarding configuration, backup procedures, and continuity of operations plans.

- If possible, the system should be designed to allow some limited capability of call answering if the PSAP is disconnected from the host location. This can be done by failovers to administrative phone systems or local survivable gateways located at the remote PSAP. Another option is geo-diversification of 9-1-1 trunks.

Also, it should be noted that the reconfiguration of PSAPs will require a thorough analysis of 9-1-1 trunk counts, locations, and geodiversity, as well as backup configurations, to ensure that it aligns with the operational model chosen.

One "early victory" that can prove the value of regional collaboration could be the phased implementation of a countywide text-to-9-1-1 solution. Certainly, challenges exist in integrating such a solution into the disparate call-handling systems that exist in the county. However, opportunities exist to implement countywide text-to-9-1-1 in a more coordinated approach among the partners, such as:

- Coordinated development of standard operating procedures (SOPs) surrounding text-to-9-1-1.
- Consideration of designated "text-to-9-1-1" PSAPs—as opposed to every PSAP being capable—to reduce costs. This is possible with text-to-9-1-1 due to a low anticipated call volume, based on nationwide implementations seen already.
- Coordinated implementation of the network that would deliver short message service (SMS) data to Lake County's PSAPs, which could result in cost savings for the implementation.
- Coordinated public education of text-to-9-1-1 implementation.

Radio Communications

The technology workgroup should engage the appropriate technical and operational contacts at STARCOM21 to discuss expanded use by partner agencies. The workgroup needs to ensure that there is enough capacity and coverage to accommodate additional users.

An area for follow-up data collection by the technology workgroup concerns further details surrounding each radio system.

The number of radio channels per dispatcher will need to be analyzed as the plan develops and potential staffing reconfigurations and facilities are considered. The County radio interoperability committee should be included in these discussions to ensure that field operations are aligned with any potential changes in dispatch. This information can be compiled into an interoperability study that assesses the current configuration as well as the impacts of any potential consolidation. Data has been collected by the technology and operations workgroups that is valuable regarding the number of frequencies/talkgroups monitored by telecommunicators.

Once the concept of operation is approved, and a projected configuration is known, additional radio system will need to be gathered from the affected PSAPs, including but not limited to:

- Radio console counts for each PSAP
- Subscriber counts (mobile, portable, by discipline)
- Backhaul from PSAP

- Special interoperability needs, if any
- Identified coverage gaps
- Any radio transitions or capital improvements in process

STARCOMM21 and the current fire/EMS quadrant-based system both could be used effectively for operations; however, some use of multiband radios or console patching may be necessary for interoperability. The detailed analysis recommended above should consider both options.

Network Connectivity

There are many variables yet to be identified regarding the usage, bandwidth requirements, locations and applications that could be supported on a Consortium-controlled ESInet. While it is premature to start to consider a more detailed design of an ESInet that can support some of the shared functions and facilities that have been identified throughout this plan, there are certain tasks, relationship building, and data gathering that the Consortium and its workgroups can begin early on in advance of that detailed planning.

Public safety communications around the country will simultaneously undergo significant transformation over the life of the transition upon which the Consortium is embarking. This transformation lies in the development and deployment of IP networks capable of transmitting large amounts of data, including voice, text, images, and video. Call delivery will need to be transformed to support more and more data, including video and text. Public safety broadband networks such as the nationwide public safety broadband network (NPSBN) being built by the First Responder Network Authority (FirstNet) will be placing the PSAP, at times, between the delivery of data from the public to field responders. Although this transformation is in its infancy, it is critical that the Consortium begins thinking of the public safety communications ecosystem as a holistic network, i.e., a network of networks, as it begins to build it out for the needs of the chosen concept of operations.

It should be anticipated that a more detailed network inventory—including an analysis of fiber and microwave capabilities and bandwidth—will be necessary as facilities are selected to participate in the end state and shared systems begin to move from the visionary stage toward reality. This inventory should be developed alongside other shared system development plans, e.g. CAD, CHE, and radio. The vision should be a common ESInet that can support multiple shared applications in a consolidated environment. Some tasks that the technology workgroup could begin to explore are listed below.

- Identify all known network capabilities that could be used in an ESInet such as local community assets, fiber, and microwave.
- Identify all public safety applications in the county that could benefit from a dedicated ESInet, including node and bandwidth requirements.
- Identify areas for capital improvement to enhance the resiliency and redundancy of existing networks.
- Identify other partners—aside from PSAPs and the ETSBs—that could benefit from a dedicated public safety ESInet, including but not limited to emergency management, transportation, and other local, state, and federal entities.
- Work with the GIS workgroup to begin to build a common Consortium ESInet network inventory map that can evolve during the Consortium's transition.

GIS and NG9-1-1

Data generated by GIS will play a far more critical role within the NG9-1-1 environment. Today GIS data primarily is used within the dispatch mapping modules in CAD systems, once the call reaches the PSAP. Increasingly, the integrity of 9-1-1 data is being put to the test as the emergency response community transitions to NG9-1-1. That is because such data will replace the legacy MSAG and Automatic Location Identification (ALI) databases. Again, GIS data will be leveraged to locate callers, ensure that the 9-1-1 call reaches the correct PSAP, and dispatch the appropriate emergency response.

The legacy 9-1-1 system uses customer telephone records and tabular data contained in the MSAG and ALI databases—e.g., street names, address ranges—to determine 9-1-1 call-routing. In contrast, the NG9-1-1 system will use dynamic GIS data to make emergency call routing function (ECRF) and location verification function (LVF) decisions. Specific NENA standards for this data are being finalized. The standards will ensure that all NG9-1-1 GIS data nationwide will be compatible.

Currently, numerous jurisdictions throughout the country maintain GIS location data at local or regional levels. These GIS datasets will become the base database for NG9-1-1, where all location-related data is derived. Aggregating GIS data from numerous sources—such as the county, municipal, and PSAP jurisdictions—for provisioning within the ECRF and LVF components of an NG9-1-1 system presents unique challenges. It is imperative then to establish the process and mechanisms necessary to assess, improve, and maintain the aggregated GIS data into a single NG9-1-1 dataset. It is very important to build rules, policies, and procedures to maintain authoritative boundaries for emergency service zones (ESZs), PSAPs, and municipalities. It is equally important to establish a governance process for changing boundary files—considering annexations and dissolutions—managing effective dates, resolving conflicts between neighboring PSAPs, and generally enforcing topology rules for PSAPs.

GIS-enabled call-routing requires accurate and up-to-date GIS data. It is imperative that local GIS data adhere to the proper data standards and that an effective plan for data maintenance is implemented. A critical step during this evolution is synchronizing GIS databases with the MSAG and ALI data. These databases should be based on a common dataset and consistent with a single standard. The objective is to achieve the NENA-recommended 98 percent match between the MSAG, ALI, and GIS databases; a less than 2 percent “no records found” rate; and minimal discrepancies.

Jurisdictions in the Consortium that maintain GIS data are encouraged to perform regular maintenance on all data layers to achieve the 98 percent match rate. Continual scrubbing of all datasets is encouraged to ensure accurate data. 9-1-1 entities should develop a succinct process that will consistently identify data discrepancies and address them as they are found. All databases should be updated in a timely manner; the current NENA recommendation is within 72 hours of edits. Maintaining high levels of coordination between database personnel, GIS personnel, database management systems, the postal authority, local addressing authorities, and all service providers will make this process more efficient.

In addition, it is critical that County stakeholders improve the boundary accuracy between PSAPs. This includes jurisdictional boundaries, PSAP boundaries, and individual emergency response boundaries. All boundaries developed for NG9-1-1 should edge-match accordingly, with no gaps or overlaps between the boundary files. Gaps and overlaps present potential call-routing issues, e.g., a call that could have no

corresponding PSAP (gap) or a call that could be sent to one of two PSAPs (overlap). It also is critical that street centerline segments edge-match accordingly across boundaries to ensure that response vehicles are properly routed to incidents, as a gap or overlap could prevent the best route from being calculated. Further, it is important that address points are not duplicated near PSAP boundary lines because duplicated points could cause a delay in the appropriate emergency response being dispatched in a timely manner.

The documentation of all processes is advised as this will make any transitions within the team(s) much easier. Keeping all documentation on a shared drive that is regularly backed up also is recommended. The Consortium may consider loading the GIS documentation onto its website so that it is accessible by all partners. Accountability and transparency are key components in the continuation of a successful GIS program within each jurisdiction as well as the Consortium.

It is outstanding that Lake County already uses the NENA-developed NG9-1-1 schema. MCP recommends adding an additional field in the site/structure address point schema for "Full Address" that includes the house number and entire street name of an address point, as well as an additional field to the road centerline schema for "Full Street Name" that includes all street name parts. The addition of these two fields to the schema will provide an easier way to scrub the datasets against each other. Additional fields may have to be added to the schema to allow for vendor-specific requirements should a shared CAD solution be established within Lake County, as well as additional fields to fulfill state-specific requirements.

MCP recommends reviewing the *Data Readiness Checklist*[8] to ensure that the County meets all statewide requirements for NG9-1-1 GIS data.

MCP understands that the GIS professionals within the Consortium may have developed and are following best practices. However, MCP believes that it is important that all jurisdictions continue to enforce best practices countywide and ensure that in times of transition that all staff are well versed in the key elements of addressing and data editing. The Consortium is a perfect forum for that to occur. MCP has provided a list of recommended best practices in Appendix F.

4.4 IGA

The success of a Tier 2 or Tier 3 initiative will depend on a well-thought out and well-written IGA.

> *Governance bodies bring together multiple disciplines and jurisdictions to address common goals and objectives to improve emergency communications. As such, an MOU/MOA helps stakeholders establish the partnerships and authority needed to achieve an effective governance structure for public safety operable and interoperable communications. An MOU/MOA is important because it defines the responsibilities of*

[8] "Next Generation 9-1-1 Project." 9-1-1 Information. Office of the Illinois Statewide 9-1-1 Administrator 9-1-1 Bureau. https://www2.illinois.gov/sites/statewide911/about/Pages/911-Information.aspx.

each party in an agreement, provides the scope and authority of the agreement, clarifies terms, and outlines compliance issues.[9]

An IGA should establish the following:

- Span of authority and control for any board/committee
- Funding mechanisms, contribution percentages, board/committee authority, and a method for updating or changing them as needed
  - Budget approval process for 911 centers, if colocated
  - Establishment of reserve accounts to pay for critical system replacements, if necessary
  - Financial contribution reevaluations
- Administrative responsibilities for accounts payable and receivable
- Maintenance responsibilities for the facility
- Process for jurisdictional or agency complaint resolution and input
- Process for dispute resolution
- Procurement processes and administrative responsibilities
- Ownership of technology purchased jointly, if applicable
- SOP approval process for shared services
- Agreed-upon service levels to be provided, including any shared telecommunicator resources, if colocated
- Development of any shared staffing positions (e.g., information technology (IT) support, training, QA/QI)
- Span of authority for shared staffing positions, if colocated
- Span of authority for supervisory oversight of co-located 9-1-1 center
- IGA length
- Withdrawal process and time requirements
- Other services, e.g., public services, detention
- Process for consolidating or colocating additional agencies
- Process for evaluating new technologies desired by a participating agency

It will be beneficial to begin compiling the IGA as different decisions are made. This will lessen the time needed to actually prepare the IGA. Attorneys for each participating entity will need to review the IGA and revisions may be necessary.

Sample IGAs can be found in Appendix G – Sample ETSB CAD IGA, Appendix H – Sample FATPOT MOU, and Appendix I – Sample Consolidation IGA.

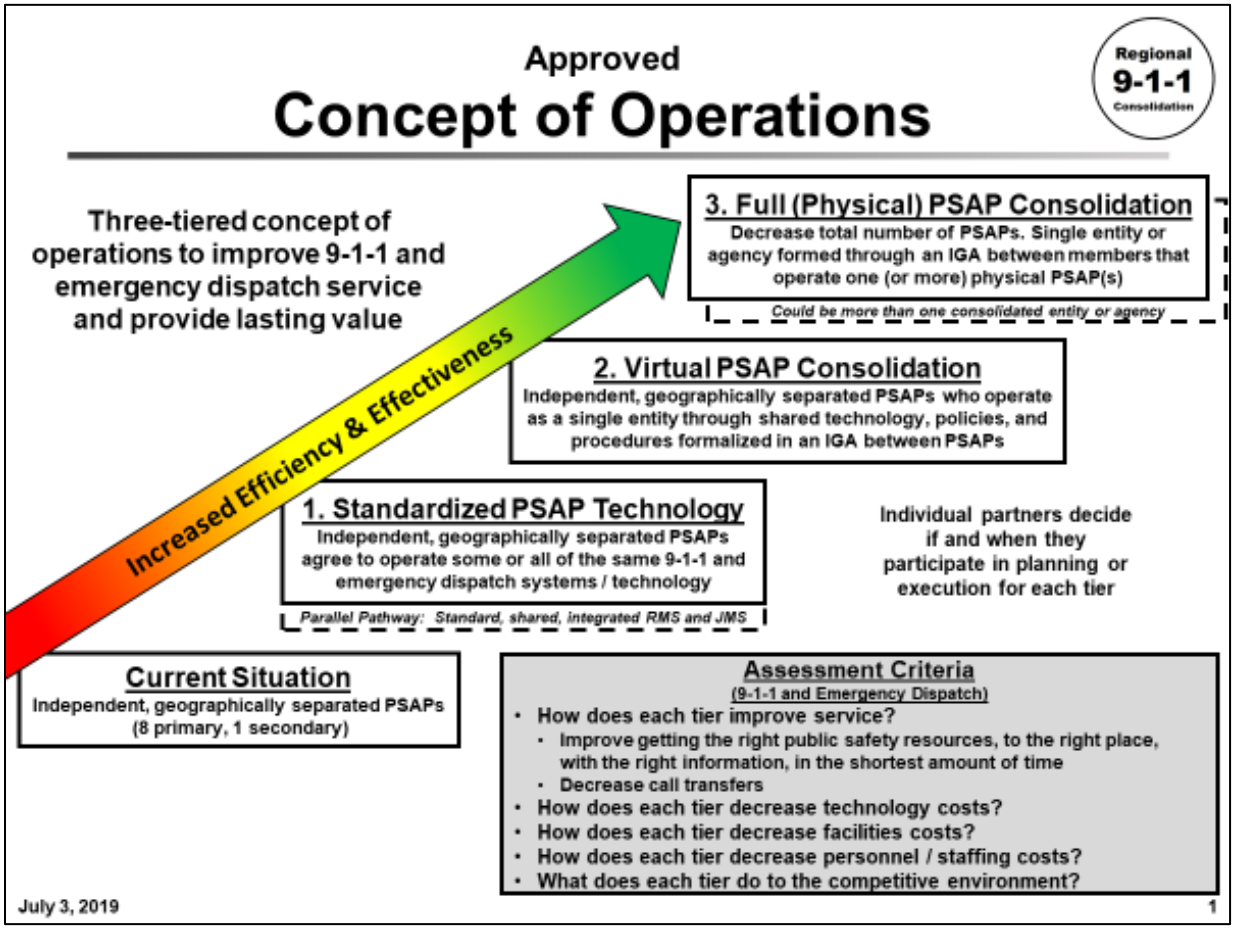
[9] Ibid.

5 Implementation Plan

Based on the concept of operations approved in July 2019, Consortium members will need to decide the specific tier they would like to attain, keeping in mind the overall objectives of the Consortium:

- Provide the right public safety resources:
  - To the right location
  - With the right information
  - In the shortest amount of time
- Increase general safety and situational awareness for emergency responders during a call or incident

Tier-specific implementation plans have been provided to allow a prompt start to implementation in 2020, depending on the selected tier.



For Lake County, Tier 1 represents a goal of standardized technology but no shared services. While Tier 1 potentially provides economies of scale, it is the least efficient of the tiers. Although the Tier 1 approach could lead to CAD, RMS, and JMS sharing for those entities that elect to participate, this tier does not

improve services or reduce call transfers. In contrast, Tier 2 represents a full sharing of services, i.e., a virtual consolidation, while Tier 3 represents a full consolidation. A co-location scenario represents a step between Tier 2 and Tier 3.

To maintain consolidation project momentum, Consortium members should determine the preferred tier for their respective agency, both short-term and long-term. This decision should be communicated to other Consortium members no later than the end of the first quarter (Q1) 2020.

There are several general recommendations.

- The technology will be the same for each Tier allowing agencies and PSAPs to easily transition from one tier to another.
- Participating PSAPs and the Lake County ETSB comprise the technology review and decision workgroup. Each PSAP and the Lake County ETSB will ensure its member agency's concerns are addressed.
- Unifying ETSB resources and/or organizations should be considered.

5.1 Tier 1 Implementation Plan – Standardized PSAP Technology

Tier 1, as defined by the planning process, is as follows: *independent, geographically separated PSAPs agreeing to operate some or all of the same 9-1-1 and emergency dispatch systems/technology*.

Objectives

- Realize economies of scale, i.e., cost savings via a shared procurement and a single, shared maintenance contract; a PSAP can take advantage of the current sharing agreements available from the Lake County ETSB
- Provide new, expanded technology to individual PSAPs
- Lay the foundation for a common operating environment

The groundwork for this tier already has begun due to some of the shared systems in place among Lake County PSAPs. During consortium planning, the workgroups agreed on the standardized systems listed below.

Table 33: Standardized Systems

PSAP System	System/Vendor
Call handling	Solacom
Radio console	Motorola
Logging recorder	NICE Systems
CAD/RMS/JMS	To be determined (TBD)

A key next step is the planned release of an RFP for a combined CAD/RMS/JMS. Once vendor proposals are received and evaluated, the partners will have the financial details needed to determine the capital, operating, and maintenance costs of participation.

5.2 Tier 2 Implementation Plan – Virtual PSAP Consolidation

Tier 2, as defined by the planning process, is as follows: *Independent, geographically separated PSAPs that operate with shared technologies, policies, and procedures, as formalized in an IGA between them.*

Objectives

- Improve service, i.e., decreased call transfers
- Improve short- and long-term backup capabilities
- Leverage cost efficiencies through shared technology and maintenance agreements
- Implement enhanced technologies, i.e., new CAD and NG9-1-1 capabilities

Tier 2 builds upon Tier 1 with the standardized systems listed below.

Table 34: Standardized Systems

PSAP System	System/Vendor	Potential Funding Source
Call handling	Solacom	ETSB or Individual Agency
CAD/RMS/JMS	TBD based on RFP	ETSB or Individual Agency
Radio console	Motorola	ETSB or Individual Agency

PSAP System	System/Vendor	Potential Funding Source
Logging recorder	NICE Systems	ETSB or Individual Agency
Standard console configuration	TBD	ETSB or Individual Agency

To achieve the objectives above, the partners and workgroups will need to execute several concurrent tasks, identified in the table below; additional details are provided in the sections that follow.

Table 35: Tier 2 Activities

Functional Area	Function/Roles/Focus
Program management	• PSAPs sign IGA defining requirements, costs, and decision-making structure • Executive director option: Hire small staff to manage consolidated aspects of program *Actions:* 1. *Begin work on IGA (ETSB IGA as the baseline)* 2. *Draft an IGA that solicits partner input for shared services (Goal Q2 2020)*
Decision-making structure (i.e., governance)	• Technology and operations decisions made by committee of partners • Potential for agency interested in Tier 3 to become "host" agency *Action:* 1. *Establish partner committees for specific shared systems and operational focus areas* 2. *Determine location(s) for shared host equipment*
Finance	• Individual PSAP or local ETSB funding • Cost sharing of expenditures supporting virtual consolidation *Action:* 1. *Determine cost-sharing model as part of IGA; can continue with separate agreements for each system being shared*

Functional Area	Function/Roles/Focus
Facility	• Individual PSAP manages facility *Action:* 1. *Individual facility enhancements to support additional equipment and network*
Operations	• Reduce or eliminate call transfers • Standardize policies and procedures • Standardize call answering • Determine call-handling response to callers, e.g., someone will be out as soon as possible, within an hour • Standardize protocol usage • Standardize telecommunicator certifications • Standardize quality assurance (QA)/quality improvement (QI) methods • Streamline operations *Actions*: 1. *Develop standard policies and procedures for adoption* 2. *Develop review and approval processes for policies* 3. *Standardize call-taking protocols for each discipline (i.e., emergency medical, fire/rescue and police); implement where necessary* 4. *Develop common CAD nature/call-type codes (in conjunction with protocols and technologies)* 5. *Determine need for accreditations*
Personnel/staffing	• Individual PSAP hiring, benefits and employee programs • Option: Allow telecommunicators with requisite training to fill-in at other PSAPs *Actions:* 1. *Develop standard baseline training program to include protocols* 2. *Determine requirements for sharing telecommunicators if pursued, e.g., which agency pays for person's time, part-time status needed, contract ramifications and remedies*
Technology	• Purchase same CAD, call handling equipment (CHE), radio consoles, recording system, etc.

Functional Area	Function/Roles/Focus
	• Public-safety-grade network (i.e., ESInet[10]) connectivity required between all participating PSAPs • Support a single, shared, scalable, integrated, enterprise CAD/RMS/JMS/mobile data system (MDS) *Actions:* *1. Determine vendor for each technology* *2. Establish ESInet steering committee to plan deployment of public-safety-grade ESInet* *3. Form CAD project workgroups* 4. *Determine other technologies that may benefit, such as fire station alerting (FSA), particularly if sharing staff*

5.2.1 Decision-making Structure

The current consortium's IGA is effective for two years from September 6, 2018, and provides the structure for the initial phase of developing the consolidation concepts. The IGA will need to be modified to support Phase 2, i.e., implementation of this plan. Ideally, an IGA that supports virtual PSAP consolidation (shared services) will be agreed to, which will allow the various components to move forward. This support will be refined throughout the implementation phase, which may result in some modifications to the IGA to memorialize changes that may be needed.

Partners should consider consolidating the number of ETSBs for better allocation of financial resources. There needs to be ongoing follow-up meetings to establish a plan to consolidate ETSBs as a means to consolidate the use of 9-1-1 surcharge funds.

- Program management—Consider Lake County ETSB as the program manager and technology support provider
- PSAP representation—Each PSAP has one vote, as does the entity acting as the program-management agency

This task may take six to eight months to achieve; if ETSBs are consolidated, the task may take longer than a year.

[10] Emergency Services Internet Protocol (IP) network

5.2.2 Cost Sharing

It will be necessary to determine cost sharing for the equipment that is shared. Generally, there will be capital, operations, and maintenance costs as specified in the IGA.

Capital costs should be broken down to determine a per-unit cost. Each entity then would be responsible for the amount of equipment at its location. Maintenance costs can be broken out in the same fashion. For example; the current IGA governing Lake County ETSB agencies' use of the Solacom CHE requires each agency to procure required hardware and call-taking workstations, and to share in the annual system maintenance based on the percentage of calls attributed to that agency.

Once costs are known, determining the proportionate costs will take little time; however, determining all the requisite costs may take six to eight months.

5.2.3 Facility Requirements

In Tier 2, each entity is still responsible for its own facility/equipment maintenance. The key consideration regarding this tier concerns host site(s) for shared systems.

The LCETSB office in Volo serves as the data center that hosts the shared CHE and CAD system. Two equipment cabinets exist, with room inside one cabinet for additional equipment. If the room were to be reconfigured, there may be space for an additional cabinet. The room is also used for storage of old mobile data terminal (MDT) base stations, which, if relocated, could provide additional space for host equipment. While there is a generator, no uninterruptible power supply (UPS) system exists. A fire sprinkler head is located above one of the equipment cabinets. Plans exist to address these issues.

Addressing these issues could take four to six months, or longer depending on procurement and approval processes. Determining other host sites for technology could take four or more months if multiple agencies express interest. If any mitigation is necessary, additional months would be required.

5.2.4 Operations

The primary goal of Tier 2 is to provide better service to citizens by eliminating call transfers. The elimination of call transfers does not affect an individual PSAP's dispatch protocols, because dispatch remains a local function. In a Tier 2 environment, with a singular CAD system shared among PSAPs, an incident automatically is routed to the appropriate PSAP for dispatch.

Several elements pertaining to shared-services operations must be addressed:

- Elimination of call transfers to Tier 2 partners
- Standard call-handling policies and procedures, including call answering and response
- Protocols
- Common CAD nature/call-type codes (in conjunction with protocols and technologies)

- QA reviews
- Complaint resolution

An operations workgroup comprised of members from each agency participating in the IGA must be established. This task may take three to four months to accomplish.

Workgroup membership should comprise two subgroups:

- Executive—a person authorized by the agency head to make decisions on behalf of the agency
  - The executive subgroup will remain in place for the IGA's duration
  - The executive subgroup will comprise two subcommittees—law enforcement and fire/EMS—split by respective agencies when necessary for administrative purposes, such as reviewing policies and procedures submitted for approval
- 9-1-1 operations—a person with extensive knowledge of all aspects of the agency's 9-1-1 operations
  - It is imperative to include personnel with 9-1-1 operational experience as they will be the ones with the broadest skillsets to provide information and feedback

The operations workgroup should be a formal group that reports via an agreed-upon decision-making structure. A chair, vice chair, and secretary should be established from the executive subgroup membership. This task may take one to two months, especially if the workgroup formalizes the positions and responsibilities.

As a whole, the operations workgroup should decide on a set of standard law enforcement, fire/rescue and emergency medical protocols to be implemented by partner agencies. While EMD is the most common, assuring that citizens are afforded the same level of service for every call is beneficial and protocols are a means to this end. Implementing such protocols also will streamline nature/call-type code development. This task could be complex, particularly if the agencies currently use disparate protocols, requiring four to six months. An opportune time to implement new protocols would be in alignment with the new CAD system implementation.

If the operations workgroup elects not to implement emergency police dispatch (EPD) and emergency fire dispatch (EFD) protocols, the workgroup will need to standardize approaches to caller questioning by fire and police telecommunicators to assure equal service. This will require alignment and agreement among the agencies regarding each nature/call-type code. The questions to be asked for each nature/call-type code will need to be determined. This task will require input from the executive and 9-1-1 operations subgroups. Depending on the time committed, this task could take from six to eight months or from 12 to 14 months.

The 9-1-1 operations subgroup should be tasked with providing recommendations regarding the following:

- A phrase for answering 9-1-1 calls, such as, "9-1-1 … what's the location of your emergency?" This should be agency-neutral to avoid confusing callers
- Shared systems training

- Workstation configurations (consortium planning recommended six monitors; this will not be important if staff resources are not shared)
- Standard basic telecommunicator training components, excluding shared systems; this will not be important if staff resources are not shared

These tasks should take three to six months; however, the recommendations would need to be adopted by the executive subgroup, which may require discussion with other agency heads. This could take four months.

The resulting decisions from the above tasks will need to be memorialized in joint shared-services policies and procedures. In addition, the operations workgroup will need to develop a policy to address call transfers. Because not all PSAPs in Lake County will participate in this endeavor, some call transfers still may be necessary. Each of the policies and procedures will need to be approved by the decision-making body.

It will be imperative to develop approval and adoption processes for policies and procedures, as well as a change-management process.

Once shared services are operational, QA reviews will be necessary. The 9-1-1 operations subgroup should recommend how calls for service for partnering agencies will be reviewed. Will it be the responsibility of the agency that answered the call, or the agency that dispatched the incident, to conduct the review? What happens if problems are encountered? How will those problems be addressed?

In addition, the operations workgroup will need to discuss and adopt a complaint-resolution process. In any shared-services environment, complaints are bound to arise. Determining ahead of time the process for addressing citizen and agency complaints is paramount. For example, if a citizen complains about how a call was handled, and one agency processed the call and another dispatched the response, which agency is responsible for reviewing the incident?

These are just some examples of what the operations workgroup will need to determine. Consequently, this will be a long-term workgroup. While the initial operational requirements for Tier 2 will require about 18 to 30 months to complete, the timeframe could be shortened depending on the amount of time the workgroup can devote to these tasks; nevertheless, it still is expected to require more than 16 months to complete the initial requirements.

5.2.5 Staffing

Staffing and training requirements will vary based on the decisions that are made by the shared-services partners.

For example, if the partners want to share staff, there are myriad discussions to be had, including at a minimum:

- Part-time status—is it allowable?
- Compensation—is the person paid by his or her primary agency or partner agency?
- Does time at another agency affect overtime at the primary agency?
- What role will be played at the partner agency?
- Encroachment—what prevents the partner agency from hiring the person down the road?
- How many agencies can employ the person?
- Who pays for training to enable the telecommunicator to work elsewhere?
- Does there need to be a years-of-experience requirement to participate?
- Does the work time at a partner agency count toward retirement credits?
- What is allowed by the unions?
- What process would be in place to request assistance?
- How will on-the-job (OTJ) training be handled?

This is an extremely complex issue to navigate. It will require the involvement of the decision-making body, human resources personnel from each entity, and, possibly, attorneys. This is a lengthy process that may take 12 months to work out. Shared services do not require the sharing of staff. If the partner agencies move forward with staff sharing, the process of memorializing and training personnel could take an additional four to eight months

As a second example, if the decision is made to use EMD, EFD, and EPD protocols, those telecommunicators without the certifications will need to go through training. Training itself will take two or three days per discipline. OTJ training requirements will need to be determined and such training could take up to three months to assure exposure to a majority of the nature/call-type codes.

Regardless of the decisions above, the shared-services partners will need to conduct training for all telecommunicators prior to sharing services. This will be necessary to assure that all personnel are familiar with the new call-answering language as well as the response to citizens when disconnecting if the response varies from “as soon as possible.” This could be held in conjunction with CAD training depending on the selected system.

The operations workgroup may need to coordinate with the CAD workgroup on any training needs if the partners elect to move forward in this manner. It likely will be easier to accomplish training a single time per telecommunicator, rather than multiple times. A train-the-trainer approach may be sufficient, or pre-shift line-up training may suffice depending on the number of topics to be covered.

The training task likely can be completed in one month, with one or more additional months needed to develop training materials depending on the number of topics and complexity.

5.2.6 Technology

Shared technology is a primary focus of Tier 2, laying the foundation for Tier 3. Any Tier 2 steps that are completed likely will continue to be part of Tier 3. Based on the planning discussions within the technology

workgroup, any PSAP looking to upgrade its technology should begin discussions with the Lake County ETSB.

CAD System (includes RMS/JMS/MDS)

The technology workgroup should stand up a CAD workgroup structure to work with the selected consultant on the RFP. It will be critical to keep the timeline moving. It is anticipated that the RFP development, review, scoring, selection, and negotiation process will not be completed until the end of June 2020. Implementation could take another one to two years depending on the number of agencies/users at the time of implementation. Considerations include the following:

1. Due to the length of time for the CAD system procurement, fast-tracking of the Tellus Safety Solutions, previously known as FATPOT, Phase 2 bidirectional solution is important for Tier 2. The current memorandum of understanding (MOU) will need updating to address Phase 2. The ETSB continues to work with Tellus on the scope of work and schedule.
2. The host agency for the shared solution needs to be identified.
3. Vendor network/bandwidth requirements should be determined as soon as possible in the design/review process.
4. Options for "buy-in" should be explored.
    a. Review and update ETSB documents.
5. Potential delays should be anticipated, stemming from complex vendor negotiations and implementation of three systems.
    a. Work will be needed to keep the schedule on track.
6. As part of the CAD/RMS/JMS/MDS project, consideration should be given to data retention and conversion during the migration from existing systems.

Radio Communications

Agencies interested in Tier 2 also will need to eventually migrate to the selected radio console system. Understanding this is an expensive financial commitment, this may take many years to accomplish. In the meanwhile, partners should:

- Continue the police agency migration to STARCOM21 as discussed during the planning process.
- Agencies with Motorola consoles should develop backup configurations as part of their agreements with the vendor.
- Several PSAPs have the Phoenix G2 FSA system. Partners should investigate the ability to remotely activate each other's systems when a backup site is utilized.
- An opportunity exists to utilize a shared console site for expanding the console system.
- Some fire departments are moving to STARCOM21, such as Lake Zurich and Wauconda.

Call-Handling Equipment

As noted in collected data and planning discussions, PSAPs that indicated their priority was to upgrade or replace their 9-1-1 CHE—i.e., CenCom, Vernon Hills, and Waukegan—should consider using Lake County ETSB's existing Solacom solution. The benefits of using the current system are as follows:

- A cost-sharing model and IGA already exist. CenCom is obtaining board approval to join the ETSB's system. FoxComm has its own Solacom system with primary and backup servers; however, there has been discussion about joining ETSB's system and colocating the backup servers.
- The LCETSB's Solacom solution is georedundant with local survivability.
- The existing system is expandable, and a hardware refresh is pending, including the core equipment and telecommunicator workstations.
  - A hardware refresh occurs every five to seven years. The most recent cost was $146,000 for each participating PSAP.
- The Solacom solution provides hot-seating capabilities for backup, i.e., a telecommunicator from one PSAP can relocate to another PSAP to answer incoming calls for his or her service area.

  Per the state 911 act *"a major purpose is to ensure that 9-1-1 systems have redundant methods of dispatch for: (1) each public safety agency within its jurisdiction, herein known as participating agencies; and (2) 9-1-1 systems whose jurisdictional boundaries are contiguous, herein known as adjacent 9-1-1 systems, when an emergency request for service is received for a public safety agency that needs to be dispatched by the adjacent 9-1-1 system."*[11]

- Current text-to-9-1-1 capability is limited within Lake County. The Solacom solution provides this capability.

Any agency that join's LCETSB's Solacom system will purchase its console equipment and then become a party to the maintenance agreement. LCETSB provides Tier 1 support while Solacom provides Tier 2 support. Maintenance cost for the system core is currently $26,000 per year. For the PSAP equipment, the total maintenance cost is $20,000. The cost for each PSAP is determined based on percentage of use or call volume and is spelled out in the IGA. A current issue concerns the lack of call-volume information that is available from the existing CHE of most partner PSAPs.

Again, as this is an expensive transition, this may take several years to accomplish.

Network Connectivity

The connectivity to support Tier 2 will require a public-safety-grade network, and possibly facility enhancements for host sites or data centers to ensure adequate bandwidth, diversity, and redundancy. Lake County ETSB's network should be extended to all participating PSAPs—current bandwidth capacity is 300 megabits per second (Mbps), but that can be expanded to 600 Mbps. The network is ring-protected with fast reroute. Waukegan's connection is a spur, while Gurnee is not on the network but should be connected to support the Tier 2 approach. Path studies would be needed to determine appropriate line of sight and tower locations. Gurnee has a 180-foot monopole tower installed in the northwest corner of the building. There appears to be available space to install microwave equipment at about the 125-foot level. Extending the network could take six to nine months.

[11] http://www.ilga.gov/legislation/publicacts/100/PDF/100-0020.pdf

Depending on the selected vendor, the CAD system and its components may have significant bandwidth requirements. For example, the average per-site CAD workstation range for 8-15 stations was 165 Mbps to 554 Mbps; the host-to-host connection range was 735 Mbps to 2.4 gigabits per second (Gbps). This must also be taken into consideration.

The STARCOM21 microwave system may have additional bandwidth available for data

In addition, consideration must be given to diversity and backup sites. Currently Lake County ETSB has diversity/backup established between Volo and Lake Zurich.

This is not an inexpensive venture and may take over one year to fully accomplish.

Recording Equipment

A decision will also need to be made regarding logging recording equipment. Will each agency maintain its own logging recorder solution or will some sharing take place with remote access? Shared archival storage is available in a centralized recorder configuration. If a shared solution is the path chosen, agencies will need to determine analog recording requirements that remain at each PSAP.

The existing shared LCETSB logging recorder system supports QA reviews and incident recreation.

Agencies should also ensure that the solution implemented is NG9-1-1-capable.

Changes from Lake County ETSB's solution may take six to ten months.

5.3 Tier 3 Implementation Plan – Full (Physical) PSAP Consolidation Planning

Tier 3, as defined by the planning process, is as follows: *Single entity or agency formed through an IGA between members that operate one (or more) physical PSAPs. (Decrease total number of PSAPs.)*

Objectives

- Improve service (significantly decrease call transfers)
- Decrease costs
- Decrease the total number of PSAPs within Lake County

There are several options available to the Consortium partners to meet Tier 3 objectives.

In a co-located environment, operations of the two or more 9-1-1 centers remain distinct, yet are housed within a single facility. An opportunity exists to share additional technology resources beyond the CAD system. In this environment, personnel resources may also be shared. For example, while 9-1-1 trunks may remain separated by jurisdiction, consideration could be given to sharing 9-1-1 telecommunicators. Any available telecommunicator should be able to answer a 9-1-1 call, regardless of where it originates.

Another option for Lake County is to have a single primary PSAP answer 9-1-1 calls and dispatch emergency response for participating partner agencies. The possibility exists that a local agency may want to remain as a secondary PSAP or just serve as a dispatch point. This may be an attractive option for law enforcement agencies, allowing them to maintain walk-up window services and/or detention functions.

However, it should be noted that under state 9-1-1 legislation, secondary answering points are not eligible for surcharge funds. While this may be possible under the Statewide 9-1-1 Act, according to the Statewide 9-1-1 Administrator: *In order to be eligible for a consolidation grant the County would consolidate under Section 15.4a, paragraph 3 which requires the creation of a JETSB and the closing of at least 50% of the County's current PSAPs, which would be 5 PSAPs.*

Tier 3 continues to use the standardized systems in Tier 2.

To achieve true consolidation, interested Consortium partners will need to execute several tasks before an IGA is drafted, approved, and signed.

The most crucial decision is to commit to negotiate regarding consolidation. It is unrealistic to expect Consortium members to agree to a consolidation without fully understanding the financial ramifications, as well as personnel and service ramifications. Committing to negotiate is the first step in the process. No IGA is necessary to explore and discuss options, or to negotiate.

Table 36: Tier 3 Activities

Functional Area	Function/Roles/Focus
Decision Support Structure	• Provides oversight to consolidated operations • Agencies involved in consolidation initiative are represented on the board *Actions:* *1. Determine board type* 2. *Determine voting composition*
Cost Distribution Method	• Ensures partners agencies agree to method of cost distribution • Assures fairness *Action:* *1. Determine cost distribution method*

Functional Area	Function/Roles/Focus
Facility Requirements	• Facility will house consolidated operations *Actions:* 1. *Determine appropriate facility to house consolidated operations* 2. *Determine need for renovations or expansion* 3. *Determine costs involved*
Responsible Agency	• Agency will have primary responsibility for day-to-day operations of consolidated center *Actions:* 1. *Determine agency to oversee consolidated operations* 2. *Consider operational components when making decision*
Operational Components	• Service delivery • Standardized dispatch methods • New support positions • Training/cross-training • Supervision • Shifts/schedules • Technical training • Career ladder *Action*: 1. *Evaluate each area above for inclusion in IGA*
Personnel	• Equalizing benefits (vacation, sick leave, retirement, union contracts) • Equalizing pay • Maintaining seniority (longevity/status) • Retirement plan • Shift assignments • Scheduling • Ancillary support positions • Administrative positions *Action*: 1. *Evaluate each area above for inclusion in IGA*

Functional Area	Function/Roles/Focus
Financial Contributions	• Agencies' fiscal responsibility to consolidation *Actions*: 1. *Determine the cost for the initial years of consolidation, taking all factors into consideration* 2. *Receive a go / no-go from each agency*
IGA	• Intergovernmental agreement detailing all aspects of the consolidation *Actions*: 1. *Draft IGA* 2. *Have IGA reviewed by attorneys* 3. *Sign IGA*
Director	• Executive director • Day-to-day oversight of consolidated operations *Action:* 1. *Hire a director*
Workgroups	• Consolidating operational components through recommendations *Actions*: 1. *Develop standard policies and procedures for adoption* 2. *Develop review and approval processes for policies* 3. *Standardize call-taking protocols for each discipline (i.e., emergency medical, fire/rescue and police); implement where necessary* 4. *Develop common CAD nature/call-type codes (in conjunction with protocols and technologies)* 5. *Determine need for accreditations*

While the concept of operations for Tier 3 is from the vantage point of one center, this should not be interpreted as the only approach. There could be two separate consolidations, or a consolidation and a co-location. The end result will depend on the interested parties and how they elect to proceed. It is possible to do a phased consolidation if partner agencies agree to "redraw the map." This means reducing the number of PSAPs by at least half.

Costs should be refined as the partners progress through the various steps.

A true consolidation, without facility concerns will take at least three to four years from initial concept to fruition.

5.3.1 Decision Support Structure

Once interested consortium members have agreed to negotiate, a decision must be made regarding the decision support structure (governance or oversight).

In 2015, SAFECOM and the National Council of Statewide Interoperability Coordinators (NCSWIC) noted the following:

The following characteristics, attributes, and activities are typical of effective governance structures:

- *Documented Authority: Establish formally with either an Executive Order or Legislation.*
- *Balanced Representation: Align needs and priorities across various stakeholders that have a role in or are impacted by communications-related initiatives.*
- *Properly-sized Membership: Determine appropriately sized membership that maintains inclusiveness while permitting a quorum to be met regularly.*
- *Accountability: Determine whether stated roles, responsibilities, and membership requirements are met routinely.*
- *Active Membership: Provide multiple means to participate in meetings (i.e., in-person, videoconference, and teleconference) while advancing information sharing and transparency by disseminating meeting minutes to members.*
- *Meeting Frequency: Maintain consistent meeting cadence. Members should collectively determine where meetings will be held and include consistent or alternating meeting location to increase attendance and participation depending on the size of the state or jurisdiction and residency of members.*
- *Scalable and Agile: Able to respond to changes in the emergency communications landscape.*
- *Rules of Engagement: Manage internal and jurisdictional differences (e.g., "checking egos at the door" and working toward common, universally beneficial goals).*
- *Transparent and Responsive: Maintain an open and transparent forum to promote greater stakeholder buy-in.*
- *Funding and Sustainment: Identify sustainable funding for existing and future emergency communications priorities.*[12]

These characteristics are applicable to decision support of 9-1-1 centers, whether consolidated or co-located.

Several options were discussed in Section 4.3.3, Governance/Decision-making Structure.

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[12] *Emergency Communications Governance Guide for State, Local, Tribal, and Territorial Emergency Communications Officials.* http://www.dhs.gov/sites/default/files/publications/2015%20Governance%20Guide_Master_508c%20Final.pdf.

This task may take six to eight months to achieve. The more entities interested in consolidation or co-location, the more complex this task may become.

In a co-located environment, the 9-1-1 centers remain as separate departments or divisions within their respective government structure. Staff members continue to report to the same position within their organizational structure as they do today. This structure maintains the operational integrity of each center, yet also may make it more difficult to accomplish goals and objectives. Overall operational parameters of the center will need to be considered before changes are made, and any requisite approval processes followed. The autonomy limits the governance structures for the co-located environment to one of joint decision-making and oversight for only the facility and shared services, such as the equipment (e.g., CAD system, logging recorder) and any shared staffing arrangements.

5.3.2 Cost Distribution Method

Following the determination of the decision support structure, a decision should be made regarding the cost distribution method. Several models were discussed in Section 4.3.4, Financial.

This task does not determine the fiscal responsibility, just the method to use for an initial determined period. The IGA can allow for the cost distribution method to be reevaluated after a set time period.

This task likely can be completed in three to four months, and should be done concurrently with the decision support structure.

5.3.3 Facility Requirements

The next two tasks will need to go hand in hand: determining the responsible authority and the facility to house the consolidated agency or co-location. These will need to be decided concurrently because the entity with authority likely will not be housed in another entity's facility.

Facilities were discussed in Section 4.3.7, Facilities.

This task may require significant negotiation and compromise on the part of interested Consortium members. It also may be necessary to drill down on expected facility renovation costs before a decision is made. This task may take six to eight months, and ideally would be discussed with interested parties during decision support structure conversations.

Modifications to any selected facility, or the construction of a new facility, likely will not be undertaken until costing is known, financial contributions to partner agencies is determined, and an IGA has been executed. Depending on needs, the physical structural process could take anywhere from 6 months to 24 months.

5.3.4 Responsible Agency Authority

The facility requirements may lead Consortium members to an easy decision regarding the entity to operate a consolidated center. Or, there may be lengthy discussions about which agency is better suited to lead a consolidation effort; this may in turn drive decisions regarding the facility.

The operational components may influence this area strongly as well.

5.3.5 Operational Components

Operational components needing decisions were discussed in Section 4.3.6, Operations.

Arriving at common ground regarding how these issues will be addressed in a consolidated or co-located environment may take five months. This timeframe is not inclusive of developing policies or procedures; it merely is determining what services the consolidated 9-1-1 center will offer and how this affects costs and their allocation. Once an IGA has been executed, workgroups will be established to address the specifics.

This task should begin after the decisions above have been made as those decisions may impact operations.

5.3.6 Technology

Any Tier 2 steps that are completed likely will continue to be part of Tier 3. This provides additional opportunities but also adds complexity. For example, if the consolidated center continues to support alarm monitoring, the central station equipment will need to be included as part of the technology transition plan.

A consolidated entity may wish to pursue other technology to enhance operations, which will affect costs.

5.3.7 Workforce

Numerous decisions must be made in this area. Decision points are discussed in Section 4.3.3, Workforce. This task likely will take one year depending on time dedicated to the task, which will rely heavily on HR personnel. This task should be started as soon as the responsible agency is determined. This task does not necessarily need to be completed before an IGA is signed, as long as each consolidation partner understands that the IGA will be modified once all the details are worked out.

It may be possible for an entity to continue to pay its own personnel while operating under an IGA. Any new employees hired could be part of the new organization. Natural attrition could ease the transitioning of staff.

5.3.8 Financial Contributions

The last task before final development of an IGA will be to determine the cost for the initial years of the consolidation or co-location. Once known, the cost distribution method is applied to determine each

participating agency's fiscal responsibility. This will enable each consortium partner that committed to negotiating to determine whether to proceed with the initiative and enter into an IGA or withdraw and remain at Tier 2, or even Tier 1.

As decisions are being made regarding the responsible agency and facility requirements, costs should be being developed. This will be an ongoing process throughout the first 18 months of a Tier 3 initiative.

5.3.9 IGA

The success of a consolidation or co-location initiative will depend in part on a well-thought out and well-written IGA, which was discussed in Section 4.4, IGA.

From the beginning of an entity's commitment to negotiate toward consolidation, an executed IGA may take 24 months to 27 months, or longer, to achieve.

5.3.10 Director/Day-to-Day Oversight

Once the IGA has been executed, a determination will be needed about hiring a director with previous consolidation experience, and support staff as needed, to oversee the consolidation or co-location and then to manage day-to-day operations.

The decision support structure should determine whether experienced personnel are already on board to successfully manage a consolidation operation. If not, advertising the position, finding a suitable candidate, and onboarding may take four to six months depending on the applicant pool.

5.3.11 Workgroups

An operations workgroup comprised of members from each agency participating in the IGA must be developed, as was discussed in Section 5.2.4, Operations.

Establishing the workgroups and initial tasks may take six months to accomplish. Any recommendations would need to be adopted by the decision support structure after approval of the executive subgroup. This could take several months.

5.3.12 Consolidated Policies and Procedures

The law enforcement and fire/EMS subcommittees and the 9-1-1 operations subgroup of the operations workgroup will need to review all call-taking and dispatching procedures for each IGA partner and, where possible, agree on a common policy and procedure, e.g., a single policy for dispatching units to a domestic violence call. This will streamline operations for telecommunicators in a consolidated environment.

In addition, the following will need to be addressed:

- Approval processes
- Changes to operations
- Change management

This task likely will take 12 to 18 months depending on the complexity of the policies and procedures of the agencies involved. This task can begin once the workgroups are initiated.

5.3.13 Staffing Assessment

Once the director is in place, an updated staffing assessment should be conducted for the consolidated center to ensure that appropriate resources are allocated to support the participating agencies. This will take two to five months, depending on the need for third-party assistance.

5.3.14 IT Support

Dedicated or contracted IT staff will be needed to support the consolidated operation. This would be direct staff or staff from the agency hosting the consolidation.

Key decision points will include:

- Determining how the staff will be allocated
- Establishing change management policies and procedures
- Establishing remote access

5.3.15 Cutover

Based on the anticipated timeframes, it is likely to take at least 48 to 52 months to achieve consolidation. Obviously, this time can be shortened if all components align and if only a small number of agencies agree to consolidate. However, the process will likely take at least 42 months.

5.4 Way Ahead

Consortium members should be in the process of socializing the tier concept with elected officials, including the major tasks noted in Tier 2 and Tier 3.

To move forward, Consortium members must determine the preferred tier for their respective agency, both short-term and long-term. Ideally, this decision should be communicated to other Consortium members no later than the end of Q1 2020.

To continue towards shared services (Tier 2) or a consolidation (Tier 3), there are other steps that must be accomplished. Checklists have been prepared that include the major steps for Tiers 2 and 3, the anticipated timeframes, and any dependencies. The checklists are in Appendix A. In addition to these checklists, an executive briefing document is in Appendix B.

Appendix A – Tier 2 and Tier 3 Checklists

The checklists for Tier 2 and Tier 3 can be found on the following pages.

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Tier 2 Checklist

Tier 2 Major Tasks	Functional Area	Timeframe	Dependencies	Completion
A. Determine preferred tier	Program Management	By End Q1 2020	**B**	☐ Date:
B. Commit to active engagement in drafting IGA or modifying current	Program Management	By End Q1 2020	A	☐ Date:
C. Determine program management entity, PSAP representation, and workgroup composition	Program Management	By End Q2 2020		☐ Date:
D. Determine technology support entity	Program Management and Technology	By End Q2 2020		☐ Date:
E. Determine participation in shared CAD/RMS/JMS procurement	Technology	By End Q2 2020 (or before negotiations begin with selected vendor)		☐ Date:
F. Determine technology cost sharing approach (capital expense, operations, maintenance) and payment schedule	Finance	By End Q2 2020		☐ Date:
G. Determine need for shared staffing	Operations and Personnel	By End Q2 2020		☐ Date:
H. Draft IGA, memorializing all decisions to date	Program Management	By End Q2 2020	C, D, F	☐ Date:

Tier 2 Major Tasks	Functional Area	Timeframe	Dependencies	Completion
I. Determine host site(s) for shared technology	Decision-making Structure, Technology and Facility	By Early Q3 2020	D	☐ Date:
J. Socialize and enter into IGA for shared services	Program Management	By End Q3 2020	H	☐ Date:
K. Ensure / extend network connectivity to all Tier 2 partners	Program Management, Decision-making Structure, and Technology	~ By End Q4 2020		☐ Date:
L. Enter into contract for shared CAD/RMS/JMS	Program Management and Decision-making Structure	By End Q3 2020	E	☐ Date:
M. Remediate any shortcomings at host site(s)	Facility	By End Q1 2021		☐ Date:
N. Convene operations workgroup(s)	Operations	Q4 2020	J	☐ Date:
O. Determine use of single protocol system, including use of EFD and EPD (continued EMD usage assumed) OR Standardize in-house call taking citizen questions	Operations	By End Q4 2021	N	☐ Date:
P. Develop standard policies and procedures for adoption, including review and approval process	Operations	By End Q1 2022	N, O	☐ Date:

Tier 2 Major Tasks	Functional Area	Timeframe	Dependencies	Completion
Q. Develop common CAD nature codes across platform	Operations	To align with CAD system implementation	N	☐ Date:
R. Develop standard baseline training program for shared call handling responsibility (to eliminate call transfers between Tier 2 partner agencies)	Personnel	By End Q1 2022	N	☐ Date:
S. Work with respective HRs to determine equitable path for shared staffing, if applicable	Decision-making Structure and Personnel	Q3 2020 to implementation of shared technologies		☐ Date:
T. Implement shared CAD/RMS/JMS	Program Management, Technology, and Operations	~ Q3 2021 – Q3 2022	L, Q	☐ Date:
U. Migrate to selected radio console system	Program Management, Decision-making Structure, Technology, and Operations	As need arises		☐ Date:
V. Migrate to Lake County ETDB's CHE	Program Management, Decision-making Structure, and Technology	As need arises		☐ Date:
W. Migrate to shared logging recorder	Program Management, Decision-making Structure, and Technology	As need arises		☐ Date:

Tier 3 Checklist

Tier 3 Major Tasks	Functional Area	Timeframe	Dependencies	Completion
A. Determine preferred tier	Program Management	By End Q1 2020	B	☐ Date:
B. Commit to negotiate regarding consolidations (not a full-fledged commitment to IGA)	Program Management	By End Q1 2020	A	☐ Date:
C. Determine decision support structure	Program Management	By End Q4 2020	D	☐ Date:
D. Determine cost distribution method	Finance	By End Q4 2020	C	☐ Date:
E. Determine responsible agency authority	Program Management	By End Q1 2021	D	☐ Date:
F. Determine location for consolidated (or co-located) center(s)	Program Management and Facility	By End Q1 2021	E	☐ Date:
G. Determine rough order of magnitude costs for facility renovations or construction of new facility	Finance	By End Q3 2021	F	☐ Date:
H. Determine operational components	Operations and Workforce / Personnel	By End Q3 2021	E	☐ Date:
I. Determine HR requirements for workforce	Workforce / Personnel	By End Q1 2022	E	☐ Date:
J. Determine financial costs for initial years of consolidation	Finance	By End Q1 2022	C, D, E, F, G, H, I	☐ Date:

Tier 3 Major Tasks	Functional Area	Timeframe	Dependencies	Completion
K. Determine Go / No-go to participate in consolidation	All	Q2 2022	C, D, E, F, G, H, I	☐ Date:
L. Execute IGA, memorializing all decisions to date	Program Management	By End Q2 2022	C, D, E, F, G, H, I, J, K	☐ Date:
M. Begin facility renovations or new construction	Facility	Q3 2022	L	☐ Date:
N. Hire director to oversee all aspects of consolidation	Decision-making Structure and Workforce / Personnel	By End Q4 2022	L	☐ Date:
O. Establish executive and operations workgroups	Operations	By End Q1 2023	N	☐ Date:
P. Develop consolidated policies and procedures	Operations (supported by Decision-making Structure)	Ongoing from Q2 2023 to Q3 2024	N, O	☐ Date:
Q. Follow up / through on operational component decisions (protocol usage, training, etc.)	Operations (supported by Decision-making Structure)	Q2 2023	N, O	☐ Date:
R. Conduct staffing assessment to determine true needs (telecommunicators, support staff, IT, etc.)	Workforce / Personnel	Q1 2023	N	☐ Date:

Tier 3 Major Tasks	Functional Area	Timeframe	Dependencies	Completion
S. Implement and/or transition standardized systems to consolidated center, as needed	Technology and Facility	TBD	M	☐ Date:
T. Train all communications center personnel	Workforce / Personnel	TBD	S	☐ Date:
U. Cutover to consolidated center	All	TBD	All	☐ Date

Appendix B – Executive Brief

The executive briefing document can be found on the following pages.

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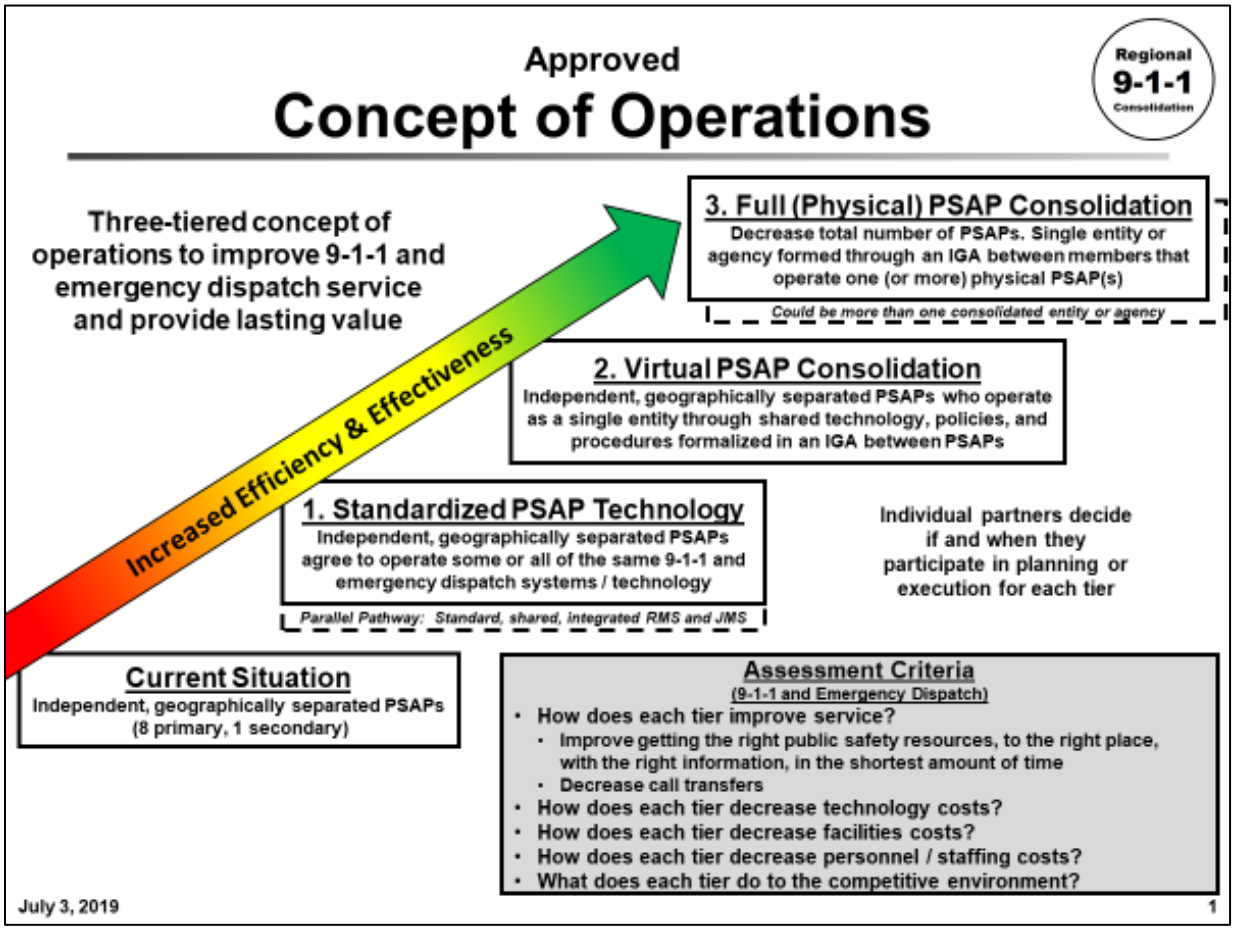
9-1-1 Consolidation Implementation Plan – Executive Brief

Working together since the fall of 2018, the Consortium of 21 public safety entities has agreed on the following concept of operations and implementation plan:



For Lake County, Tier 1 represents a goal of standardized technology but no shared services. While Tier 1 potentially provides economies of scale, it is the least efficient of the tiers as it does not improve services or reduce call transfers. In contrast, Tier 2 represents a full sharing of services, i.e., a virtual consolidation, while Tier 3 represents a full consolidation. A co-location scenario represents a step between Tier 2 and Tier 3.

To move forward, it is important for Consortium members to determine the preferred tier for their respective agency, both short-term and long-term. This decision should be communicated to other Consortium members no later than the end of the first quarter (Q1) 2020.

While the partners and workgroups have determined the tiers to attain consolidation in Lake County, there are various differences between consolidation, co-location, and shared services. *9-1-1 Magazine* published an article that provides good information regarding PSAP-consolidation types, which are identified below.

> ***Full consolidation:*** *All existing dispatch services are moved to a single dispatch center with a single management structure. A consolidated center requires diverse centers to be brought together under one management team with common operating platforms. While full consolidation often has the largest start up costs (initial investment) it typically provides the greatest long-term cost savings.*
>
> *…*
>
> ***Co-located consolidation:*** *In this scenario, multiple dispatch centers are moved to the same physical location, but maintain separate operations. Often, this type of consolidation will bring together all of the agencies into one center located in the same building. The different operations share some of the infrastructure costs, but they remain separate in their dispatch responsibilities. This type of configuration is often driven by diverse dispatch needs in the individual communities.*
>
> *In a scenario where 911 centers are co-located with separate operations, there is the potential (though not the requirement) to share some common equipment, such as the CAD system, RMS and radio equipment and maintain multiple 911 switches. The CAD and recorder systems in this scenario may also remain separate. The most challenging issues, however, usually involve personnel: parallel staffing for each agency, with multiple, separate schedules, pay scales, leave policies, and supervisors may prove inefficient.*
>
> ***Shared services:*** *The major services are shared among multiple agencies. Typically, this includes the CAD, 911 Customer Premise Equipment (CPE) Automatic Number Identification / Automatic Location Identification (ANI/ALI), logging recording, Geographic Information System (GIS) mapping, and possibly the RMS system. In some cases, it may also be preferable to share radio system resources. In this scenario, critical systems are maintained in a single location, and all dispatch centers access them via an IP network. This environment requires redundant, reliable high-speed connectivity between the shared services location and each dispatch center.*
>
> *Additionally, the agencies may agree to use a common CAD, RMS and radio console vendor. In this type of shared services environment, many of the dispatch centers may maintain their own CAD and RMS servers but choose a configuration that facilitates a common operating picture, which enables them to see all emergency response assets. A key advantage of this approach is the opportunity to share equipment costs and to reduce purchase and maintenance costs. In addition, shared technical support may increase interoperability and operational awareness.*

One disadvantage of the shared services consolidation may be duplication of personnel and management, but our experience is that personal preferences and political realities may not support consolidation beyond this shared services approach.[13]

Consolidation Project Objectives

Objectives

- Provide the right public safety resources:
  - To the right location
  - With the right information
  - In the shortest amount of time
- General safety and situational awareness for emergency responders during a call or incident

Tier 1, as defined by the planning process, is as follows: *independent, geographically separated PSAPs agreeing to operate some or all of the same 9-1-1 and emergency dispatch systems/technology.*

Objectives

- Realize economies of scale, i.e., cost savings via a shared procurement and a single, shared maintenance contract; a PSAP can take advantage of the current sharing agreements available from the Lake County ETSB
- Provide new, expanded technology to individual PSAPs
- Lay the foundation for a common operating environment

Tier 2, as defined by the planning process, is as follows: *Independent, geographically separated PSAPs that operate with shared technologies, policies, and procedures, as formalized in an IGA between them.*

Objectives

- Improve service, i.e., decreased call transfers
- Improve short- and long-term backup capabilities
- Leverage cost efficiencies through shared technology and maintenance agreements
- Implement enhanced technologies, i.e., new CAD and NG9-1-1 capabilities

[13] AECOM Consolidated Dispatch Centers. 9-1-1 Magazine, June 2011.

Tier 3, as defined by the planning process, is as follows: *Single entity or agency formed through an IGA between members that operate one (or more) physical PSAPs. (Decrease total number of PSAPs.)*

Objectives

- Improve service (significantly decrease call transfers)
- Decrease costs
- Decrease the total number of PSAPs within Lake County

Appendix C – Staffing Analysis – Calculations and Supporting Data

Table B-1: Incident Statistics

Population	590,935
9-1-1 Wireline Calls	42,866
9-1-1 Wireless Calls	204,294
9-1-1 VOIP[14] Calls	9,154
Abandoned 9-1-1 Calls	4,932
7-Digit/10-Digit Incoming Calls	789,912
7 digit/10-digit Outgoing Calls	294,410
Fire Service/EMS Incidents	69,809
Law Enforcement Incidents	861,866
NCIC Transactions	215,466

Based on additional statistics gathered from the PSAPs and those contained in the table above, the preliminary staffing assessment determined that filling one position, regardless of function, 24 x 7 requires five FTEs without attrition and six FTEs with attrition, as indicated in the table below.

Table B-2: Coverage Staffing

FTEs for Coverage		
A	1	Total number of console positions to be covered
B	24	Number of hours per day that need to be covered
C	7	Number of days per week that need to be covered
D	52	Number of weeks per year that need to be covered
E	8,736	Total hours needing coverage (A x B x C x D)
Telecommunicator Availability:		
F	1,578.96	True availability per telecommunicator
FTEs Needed:		
G	5.5	FTE base estimate = E/F
H	2.6%	Attrition rate
I	5.64	FTEs required to accommodate attrition

[14] Voice over Internet Protocol.

9-1-1 Call-Takers

To determine the staffing needed to handle the incoming call volume, the average incoming 9-1-1 calls per hour typically is evaluated. Because this information was not available, but the total overall call volume was available, the total call-takers needed per shift was based on overall 9-1-1 call volume versus 9-1-1 calls per hour.

8-Hour Shifts

The table below indicates the total number of call-takers needed using the 8-hour-shift model.

Table B-3: Call-Takers – 8-Hour Shift

FTEs for Call Taker Volume Positions		
	Position:	**Call Taker 2400 to 0800 hours**
A	230,278	Total Call Volume from 2400 to 0800 hours
B	0:01:44	Estimated average processing time for this position
C	34.62	Hourly Processing Capability (HPC) = 1 hour/B
	1:00:00	Hour
D	6652.49	Workload in hours (W) = A/C {calls per hour handled}
Telecommunicator Availability:		
E	1653.91	True Availability per Telecommunicator
FTEs Needed:		
F	4.02	FTE base estimate (FTE) = D/E
G	2.9%	Attrition Rate
H	4.14	FTEs required to accommodate attrition

FTEs for Call Taker Volume Positions		
	Position:	**Call Taker 0800 to 1600 hours**
A	601,051	Total Call Volume from 0800 to 1600 hours
B	0:01:45	Estimated average processing time for this position
C	34.2857143	Hourly Processing Capability (HPC) = 1 hour/B
	1:00:00	Hour
D	17530.65	Workload in hours (W) = A/C {calls per hour handled}
Telecommunicator Availability:		
E	1653.91	True Availability per Telecommunicator
FTEs Needed:		
F	10.60	FTE base estimate (FTE) = D/E

G	2.9%	Attrition Rate
H	10.91	FTEs required to accommodate attrition

FTEs for Call Taker Volume Positions		
	Position:	**Call Taker 1600 hours to 2400 hours**
A	514,668	Total Call Volume from 1600 to 2400 hours
B	0:01:45	Estimated average processing time for this position
C	34.2857143	Hourly Processing Capability (HPC) = 1 hour/B
	1:00:00	Hour
D	15011.14	Workload in hours (W) = A/C {calls per hour handled}
Telecommunicator Availability:		
E	1653.91	True Availability per Telecommunicator
FTEs Needed:		
F	9.08	FTE base estimate (FTE) = D/E
G	2.9%	Attrition Rate
H	9.34	FTEs required to accommodate attrition

24	**Total Number FTE Call Takers Needed**

Spread among three shifts, this results in approximately eight FTE call-takers per shift.

12-Hour Shifts

The table below indicates the total number of call-takers needed using the 12-hour-shift model:

Table B-4: Call-Takers – 12-Hour Shift

FTEs for Call Taker Volume Positions		
	Position:	**Call Taker 0600 to 1800 hours**
A	774,515	Total Call Volume from 0600 to 1800 hours
B	0:01:44	Estimated average processing time for this position
C	34.62	Hourly Processing Capability (HPC) = 1 hour/D
	1:00:00	Hour
D	22374.88	Workload in hours (W) = A/C {calls per hour handled}
Telecommunicator Availability:		
E	1795.04	True Availability per Telecommunicator
FTEs Needed:		
F	12.46	FTE base estimate (FTE) = D /E

G	2.9%	Attrition Rate
H	12.83	FTEs required to accommodate attrition

FTEs for Call Taker Volume Positions		
	Position:	**Call Taker 1800 to 0600 hours**
A	571,482	Total Call Volume from 1800 to 0600 hours
B	0:01:44	Estimated average processing time for this position
C	34.62	Hourly Processing Capability (HPC) = 1 hour/D
	1:00:00	Hour
D	16509.47	Workload in hours (W) = A/C {calls per hour handled}
Telecommunicator Availability:		
E	1795.04	True Availability per Telecommunicator
FTEs Needed:		
F	9.20	FTE base estimate (FTE) = D/E
G	2.9%	Attrition Rate
H	9.46	FTEs required to accommodate attrition

22	**Total Number FTE Call Takers Needed**

Spread among two shifts, this results in approximately 11 FTE call-takers per shift.

Law Enforcement Dispatch

To determine the staffing needed to handle the dispatching of law enforcement incidents, the number of such incidents is evaluated based on the total number of simultaneous incidents a telecommunicator can manage successfully. Because this information was not available, an estimate of seven simultaneous incidents was used.

8-Hour Shifts

The table below indicates the total number of law enforcement dispatchers needed using the 8-hour-shift model.

Table B-5: Law Enforcement Dispatchers – 8-Hour Shift

FTEs for Law Dispatcher Volume Positions		
	Position:	**Law Dispatcher 2400 to 0800 hours**
A	203,400	Total Law Enforcement Incident Volume from 2400 to 0800 hours
B	7	Number of simultaneous incidents that can be handled by one Dispatcher

C	29057.20	Incident Volume Adjusted (A/B)
D	0:22:49	Estimated average processing time for this position
E	2.63	Hourly Processing Capability (HPC) = 1 hour/D
	1:00:00	Hour
F	11049.81	Workload in hours (W) = C/E {calls per hour handled}
Telecommunicator Availability:		
G	1653.91	True Availability per Telecommunicator
FTEs Needed:		
H	6.68	FTE base estimate (FTE) = F/G
I	2.9%	Attrition Rate
J	6.87	FTEs required to accommodate attrition

FTEs for Law Dispatcher Volume Positions		
	Position:	**Law Dispatcher 0800 to 1600 hours**
A	329,233	Total Law Enforcement Incident Volume from 0800 to 1600 hours
B	7	Number of simultaneous incidents that can be handled by one Dispatcher
C	47033.26	Incident Volume Adjusted (A/B)
D	0:22:49	Estimated average processing time for this position
E	2.63	Hourly Processing Capability (HPC) = 1 hour/D
	1:00:00	Hour
F	17885.70	Workload in hours (W) = C/E {calls per hour handled}
Telecommunicator Availability:		
G	1653.91	True Availability per Telecommunicator
FTEs Needed:		
H	10.81	FTE base estimate (FTE) = F/G
I	2.9%	Attrition Rate
J	11.13	FTEs required to accommodate attrition

FTEs for Law Dispatcher Volume Positions		
	Position:	**Law Dispatcher 1600 to 2400 hours**
A	329,233	Total Law Enforcement Incident Volume from 1600 to 2400 hours
B	7	Number of simultaneous incidents that can be handled by one Dispatcher
C	47033.26	Incident Volume Adjusted (A/B)
D	0:22:49	Estimated average processing time for this position
E	2.63	Hourly Processing Capability (HPC) = 1 hour/D
	1:00:00	Hour
F	17885.70	Workload in hours (W) = C/E {calls per hour handled}
Telecommunicator Availability:		

G	1653.91	True Availability per Telecommunicator
FTEs Needed:		
H	10.81	FTE base estimate (FTE) = F/G
I	2.9%	Attrition Rate
J	11.13	FTEs required to accommodate attrition

29.13	**Total FTE Law Dispatchers Needed**

Spread among three shifts, this results in approximately 10 FTE law enforcement dispatchers per shift.

12-Hour Shifts

The following tables indicate the total number of law enforcement dispatchers using the 12-hour-shift model:

Table B-6: Law Enforcement Dispatchers – 12-Hour Shift

FTEs for Law Dispatcher Volume Positions		
	Position:	**Law Dispatcher 0600 to 1800 hours**
A	458,513	Total Law Enforcement Incident Volume from 0600 to 1800 hours
B	7	Number of simultaneous incidents that can be handled by one Dispatcher
C	65501.82	Incident Volume Adjusted (A/B)
D	0:22:49	Estimated average processing time for this position
E	2.63	Hourly Processing Capability (HPC) = 1 hour/D
	1:00:00	Hour
F	24908.89	Workload in hours (W) = C/E {calls per hour handled}
Telecommunicator Availability:		
G	1795.04	True Availability per Telecommunicator
FTEs Needed:		
H	13.88	FTE base estimate (FTE) = F/G
I	2.9%	Attrition Rate
J	14.28	FTEs required to accommodate attrition

FTEs for Law Dispatcher Volume Positions		
	Position:	**Law Dispatcher 1800 to 0600 hours**
A	403,353	Total Law Enforcement Incident Volume from 1800 to 0600 hours
B	7	Number of simultaneous incidents that can be handled by one Dispatcher
C	57621.90	Incident Volume Adjusted (A/B)
D	0:22:49	Estimated average processing time for this position

E	2.63	Hourly Processing Capability (HPC) = 1 hour/D
	1:00:00	Hour
F	21912.33	Workload in hours (W) = C/E {calls per hour handled}
Telecommunicator Availability:		
G	1795.04	True Availability per Telecommunicator
FTEs Needed:		
H	12.21	FTE base estimate (FTE) = F/G
I	2.9%	Attrition Rate
J	12.56	FTEs required to accommodate attrition
	26.84	**Total Number FTE Law Dispatchers Needed**

Spread among two shifts, this results in approximately 14 FTE law enforcement dispatchers per shift.

Fire Service/EMS Dispatch

To determine the staffing needed to handle the dispatching of fire service and EMS incidents, the number of such incidents is evaluated based on the total number of simultaneous incidents a telecommunicator can manage successfully. Because this information was not available, an estimate of three simultaneous incidents was used. It should be noted that the CenCom center serves as the MABAS[15] Division 4 dispatch center. This is an additional workload for the fire service/EMS dispatch positions that must be considered and could be quantified given further analysis.

8-Hour Shifts

The tables below indicate the total number of fire service and EMS dispatchers needed using the 8-hour-shift model.

Table B-7: Fire/EMS Dispatchers – 8-Hour-Shift

FTEs for Fire Dispatcher Volume Positions		
	Position:	**Fire Dispatcher 2400 to 0800 hours**
A	13,752	Total Fire Incident Volume from 2400 to 0800 hours
B	3	Number of simultaneous incidents that can be handled by one Dispatcher
C	4584.12	Incident Volume Adjusted (A/B)
D	0:34:07	Estimated average processing time for this position
E	1.76	Hourly Processing Capability (HPC) = 1 hour/D

[15] Mutual Aid Box Alarm System.

	1:00:00	Hour
F	2606.58	Workload in hours (W) = C/E {calls per hour handled}
Telecommunicator Availability:		
G	1653.91	True Availability per Telecommunicator
FTEs Needed:		
H	1.58	FTE base estimate (FTE) = F/G
I	2.9%	Attrition Rate
J	1.62	FTEs required to accommodate attrition

FTEs for Fire Dispatcher Volume Positions		
	Position:	**Fire Dispatcher 0800 to 1600 hours**
A	29,878	Total Fire Incident Volume from 0800 to 1600 hours
B	3	Number of simultaneous incidents that can be handled by one Dispatcher
C	9959.42	Incident Volume Adjusted (A/B)
D	0:34:07	Estimated average processing time for this position
E	1.76	Hourly Processing Capability (HPC) = 1 hour/D
	1:00:00	Hour
F	5663.04	Workload in hours (W) = C/E {calls per hour handled}
Telecommunicator Availability:		
G	1653.91	True Availability per Telecommunicator
FTEs Needed:		
H	3.42	FTE base estimate (FTE) = F/G
I	2.9%	Attrition Rate
J	3.52	FTEs required to accommodate attrition

FTEs for Fire Dispatcher Volume Positions		
	Position:	**Fire Dispatcher 1600 to 2400 hours**
A	26,178	Total Fire Incident Volume from 1600 to 2400 hours
B	3	Number of simultaneous incidents that can be handled by one Dispatcher
C	8726.13	Incident Volume Adjusted (A/B)
D	0:34:07	Estimated average processing time for this position
E	1.76	Hourly Processing Capability (HPC) = 1 hour/D
	1:00:00	Hour
F	4961.77	Workload in hours (W) = C/E {calls per hour handled}
Telecommunicator Availability:		
G	1653.91	True Availability per Telecommunicator
FTEs Needed:		
H	3.00	FTE base estimate (FTE) = F/G
I	2.9%	Attrition Rate

J	3.09	FTEs required to accommodate attrition

	8.23	**Total Number FTE Fire Dispatchers Needed**

Spread among three shifts, this results in approximately three FTE fire service/EMS dispatchers per shift.

12-Hour Shifts

The following table indicates the total number of fire service and EMS dispatchers needed using the 12-hour-shift model.

Table B-8: Fire/EMS Dispatchers – 12-Hour Shift

FTEs for Fire Dispatcher Volume Positions		
	Position:	**Fire Dispatcher 0600 to 1800 hours**
A	41,536	Total Fire Incident Volume from 0600 to 1800 hours
B	3	Number of simultaneous incidents that can be handled by one Dispatcher
C	13845.45	Incident Volume Adjusted (A/B)
D	0:34:07	Estimated average processing time for this position
E	1.76	Hourly Processing Capability (HPC) = 1 hour/D
	1:00:00	Hour
F	7872.68	Workload in hours (W) = C/E {calls per hour handled}
Telecommunicator Availability:		
G	1795.04	True Availability per Telecommunicator
FTEs Needed:		
H	4.39	FTE base estimate (FTE) = F/G
I	2.9%	Attrition Rate
J	4.51	FTEs required to accommodate attrition

FTEs for Fire Dispatcher Volume Positions		
	Position:	**Fire Dispatcher 1800 to 0600 hours**
A	28,273	Total Fire Incident Volume from 1800 to 0600 hours
B	3	Number of simultaneous incidents that can be handled by one Dispatcher
C	9424.22	Incident Volume Adjusted (A/B)
D	0:34:07	Estimated average processing time for this position
E	1.76	Hourly Processing Capability (HPC) = 1 hour/D
	1:00:00	Hour
F	5358.71	Workload in hours (W) = C/E {calls per hour handled}
Telecommunicator Availability:		
G	1795.04	True Availability per Telecommunicator

FTEs Needed:		
H	2.99	FTE base estimate (FTE) = F/G
I	2.9%	Attrition Rate
J	3.07	FTEs required to accommodate attrition

	7.58	**Total Number FTE Fire Dispatchers Needed**

Spread among two shifts, this results in approximately four FTE fire/EMS dispatchers per shift.

Supervision and Additional Dispatch Functions

Appropriate and focused supervision of operational personnel is critical. The current environment—due to its nature of smaller, more localized PSAPs—does have 19 authorized supervisory personnel amongst the PSAPs that serve their individual PSAPs specific to how the current workforce is configured. Four of the PSAPs reported that they do not have dedicated supervisors. This often is addressed through a "communications center manager" who oversees the entire operation, not a specific shift—or working lead or senior telecommunicators who are given a formal responsibility of overseeing the shift that they are working.

However, whether supervision is performed by a supervisor or acting supervisor this aligns with national standards. NFPA 1221, Section 7.3.4 states, "Supervision shall be provided when more than two telecommunicators are on duty." Annex A of NFPA 1221 provides further explanation. Section 7.3.4 states, "The supervisor position(s) in the communications center are provided in addition to the telecommunicators [sic] positions. Although supervisory personnel are intended to be available for problem-solving, the supervisor position is permitted to be a working position." Section 7.3.4.1 states, "Supervision shall be provided by personnel located within the communications center who are familiar with the operations and procedures of the communications center. Section 7.3.4.2 states, "The supervisor shall be allowed to provide short-term relief coverage for a telecommunicator, provided that the telecommunicator does not leave the communications center and is available for immediate recall as defined in the policies and procedures of the AHJ.

It is envisioned that the consolidated model chosen in the concept of operations will require dedicated supervision; that is, the positions provide oversight to personnel and do not answer incoming calls or dispatch emergency response. This allows the supervisors to focus on the operations of the 9-1-1 center, as well as the following:

- Provide coordination and direction during major emergency incidents
- Provide more supervision for diversified, complex tasks
- Provide greater knowledge of laws, procedures, and administrative processes
- Focus on customer service to the public and subscriber agencies
- Allow for improved communications with management, subordinates, and responder agencies

- Are available for problem-solving
- Provide a narrower scope of supervision when implementing new policies and procedures
- Stay abreast of technological changes/advancements
- Serve as a single point of contact for responder agencies
- Are readily able to identify areas for growth among subordinates
- Can document employees' performance for annual/periodic reviews
- Provide guidance to new employees who have less training and experience
- Spend more time with subordinates individually, daily
- Identify areas for remedial training, counseling or discipline, when appropriate
- Address issues upon occurrence, not after the fact
- Set priorities
- Allow for delegation of tasks/responsibilities

The Standards for Public Safety Communications Agencies (SPSCA), established jointly by CALEA and APCO does not specifically address staffing or supervision in a PSAP. However, both sets of standards references utilizing Incident Command System (ICS) protocols. (CALEA Standard 46.1.2 and SPSCA Standard 7.1.2 are mandatory for accreditation.)

The Department of Homeland Security (DHS), coordinating with federal, state, and local governments established the National Incident Management System (NIMS). ICS falls under the command and management element of NIMS. ICS represents best practices and is the standard for emergency management across the country. ICS requires a supervisor when there are between three and seven persons performing similar functions. (The optimal span of control is five.) A manageable span of control allows supervisors to supervise and control their subordinates while allowing for efficient communications between all parties.

For the estimation purposes in this preliminary staffing analysis, MCP assumed a span of control of one supervisory figure for every seven subordinates. Thus, eight supervisor FTEs would be required in an 8-hour configuration and nine supervisor FTEs would be required in a 12-hour configuration. Both would always result in the need for two supervisory personnel on duty.

The number of telecommunicators needed to handle all NCIC transactions and tasks—including routine inquiries for vehicles, persons, and articles, as well as entries for warrants and protective orders—also can be calculated. However, the number of NCIC transactions in Lake County is not tracked. To calculate a value for this function, it was estimated that one in four law enforcement incidents require an NCIC transaction. It also was estimated that the average NCIC transaction takes five minutes or less. Consequently, one NCIC dispatcher is needed per shift, for both the 8-hour and 12-hour shift configurations.

The number of dispatchers needed to handle text-to-9-1-1 sessions also can be calculated. However, data for total annual text-to-9-1-1 sessions received is not tracked or was not provided; therefore, no calculation for this was completed.

Appendix D – Staffing Analysis Data Points

The data points identified in the table below typically are required to perform a comprehensive staffing study. Much of this data has been gathered and is found in the project data book. The table below also indicates the estimated values/assumptions used by MCP when data was unavailable for a category. The estimated values/assumptions are being identified in case actual data for these categories is needed for further assessment and analysis.

Category	Data Point	Estimated Value/Assumption
Agency – General	• Agencies served (dispatched)	
	• Accredited agencies served	
	• Number of FTEs: o Management (director and deputy directors) o Call-takers o Law enforcement dispatchers o Fire/rescue dispatchers o EMS dispatchers o NCIC dispatchers o Shift supervisors o Training supervisor o Training staff (full-time) o QA supervisor o QA staff (full-time) o GIS coordinator o CAD administrator o IT o 9-1-1 technologist o 9-1-1 system coordinator o Administrative assistant	
	• Number of workstation positions	
	• Responsibilities of each position by position (e.g., number of frequencies, number of agencies dispatched)	

Category	Data Point	Estimated Value/Assumption
	• Operational configuration (e.g., call-taking and dispatching combined or separate)	
	• Protocol usage (if yes, identify vendors and protocols used)	
	• Schedule (e.g., 8-hr, 10-hr, or 12-hr; the number of days on and off)	
	• Power shifts (if so, hours/days)	
	• Number of shifts	
	• Staff per shift	
	• Number of supervisory personnel	
	• Call-answering standard used (e.g., NFPA, NENA)	
Agency – Operations	• Busiest hour of the day	
	• Busiest day of the week	
	• Total NCIC/State queries	215,466 (total law enforcement call volume divided by 4, to assume 1 in 4 law enforcement calls has an NCIC query)
	• Total law enforcement incidents (broken down by agency)	
	• Total fire service incidents for 2014-2018 (broken down by agency)	
	• Total EMS incidents for 2014-2018 (broken down by agency)	
	• Average time to process a 9-1-1 call from pick-up to disconnect	
	• Average time to process a 7-digit/10-digit (administrative) call from pick-up to disconnect	

Category	Data Point	Estimated Value/Assumption
	• Average time to process an NCIC/State request and relay information	5 minutes (assumption made as an average between simple inquiries as well as entries for warrants, protective orders, etc.)
	• Average time of a law enforcement incident from the time of dispatch to time scene is cleared	
	• Average time of a fire service incident from the time of dispatch to time scene is cleared	
	• Average time of an EMS incident from the time of dispatch to time scene is cleared	
	• The number of positions that must be staffed (minimum) per time (e.g., call-taker, law enforcement dispatcher, fire department dispatcher, EMS dispatcher, NCIC, teletype)	
	• The number of positions that are normally staffed per time (e.g., call-taker, law enforcement dispatcher, fire department dispatcher, EMS dispatcher, NCIC, teletype)	
Shift – Day/Night	• For 2014-2018: o Total 9-1-1 wireline call volume o Total 9-1-1 wireless call volume o Total abandoned call volume o Total VoIP call volume	

Category	Data Point	Estimated Value/Assumption
	o Total 7-digit/10-digit emergency and non-emergency call volume o Total outbound call volume o Text-to-9-1-1 call volume and average call duration (if implemented)	
Shift – 1st/2nd/3rd	• For 2014-2018:	
	o Total 9-1-1 wireline call volume	o Volume divided by shift based on sample data from NENA (midnight 16.6%/day 49.1%/night 34.3%)
	o Total 9-1-1 wireless call volume	o Volume divided by shift based on sample data from NENA (midnight 16.3%/day 40.4%/night 43.3%)
	o Total abandoned call volume	o Volume divided by shift based on sample data from NENA (midnight 17.2%/day 31.9%/night 50.9%)
	o Total VoIP call volume	o Volume divided by shift based on sample data from NENA (midnight 15.8%/day 44.8%/night 39.4%)
	o Total 7-digit/10-digit emergency and non-emergency call volume	o Volume divided by shift based on sample data from NENA (midnight 17.4%/day 46.7%/night 35.9%)

Category	Data Point	Estimated Value/Assumption
	o Total outbound call volume o Text-to-9-1-1 call volume and average call duration (if implemented)	o Volume divided by shift based on sample data from NENA (midnight 17.0%/day 41.7%/night 41.3%)
Position – Telecommunicators/Supervisors	• Number of full time and part-time employees (authorized) for the last three years, by year	
	• Average meal and break time allotted per shift	50 minutes (assumption made as potential allotment for new agency)
	• Number of full time and part-time employees (actual) for the last three years, by year	
	• For 2014-2018: o Total leave usage in hours o Average annual and holiday leave used per person o Average annual sick leave used per person o Average annual personal leave used per person	o 160 hours total (2 weeks' vacation and 10 holidays – assumption made as potential allotment for new agency) o 80 hours (2 weeks sick leave – assumption made as potential allotment for new agency) o 0 o 0

Category	Data Point	Estimated Value/Assumption
	o Average comp time used per person o Average FMLA[16] used per person o Average military time used per person o Average other time (meetings, training, etc.) used per person o Total number of employees at the highest total staffing level o Total number of new hires who failed to complete the probationary/training period o Total number of experienced employees who left for any reason o Total number of employees (full- and part-time) as of Dec. 31, 2018	o 0 o 0 o 15 hours (assumption made as potential allotment for new agency)

[16] Family Medical Leave Act.

Appendix E – Training Best Practices

The table below identifies the training topics covered in the *Recommended Minimum Training Guidelines for the Telecommunicator*. The figure below identifies a prospective step-by-step training process that meets the intent of the guidelines.

Table C-1: Training Guidelines for the Telecommunicator

Recommended Training Topic	Covered in Academy
Roles and Responsibilities	✓
Legal Concepts	✓
Interpersonal Communications	✓
Emergency Communications Technology	✓
Call Processing	✓
Emergency Management	✓
Radio Communication	✓
Stress Management	✓
Quality Assurance	✓
On-the-Job Training	✓

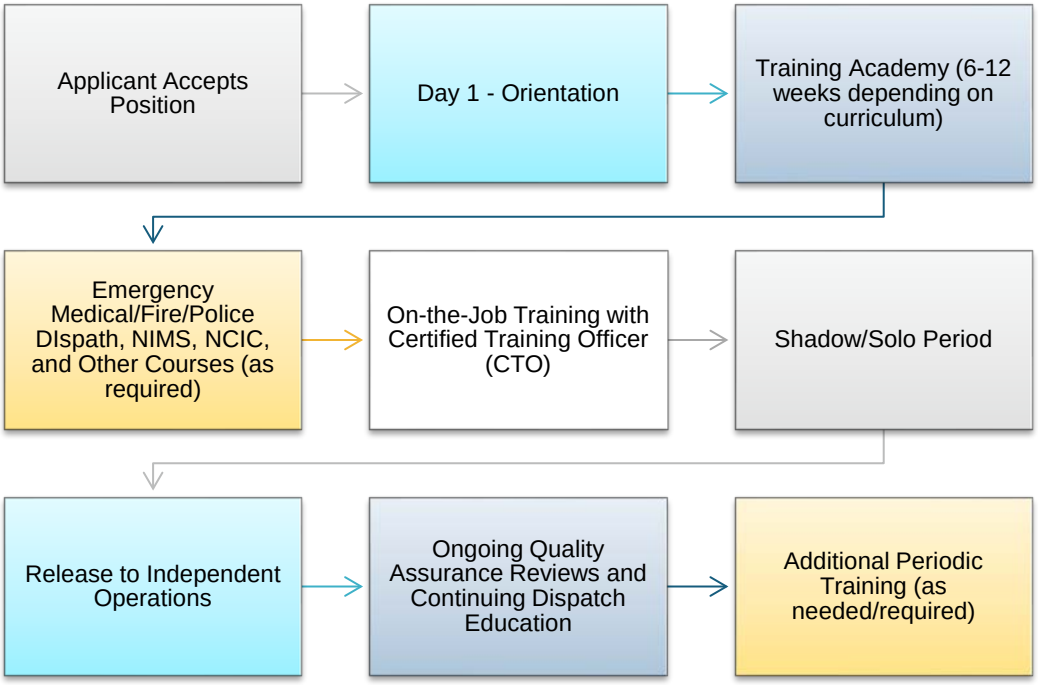


Figure C-1: Recommended Training Process

Continuing Dispatch Education

Continuing education is a vital element of an emergency communications training program especially because the 9-1-1 landscape is changing as legacy networks and systems migrate to NG9-1-1. There are certain roles and responsibilities that are ever evolving and ensuring that all telecommunicators are aware of those changes helps to significantly reduce personal and agency liability. MCP recommends allowing telecommunicators, shift supervisors, and managers to submit materials for continuing education.

Appendix F – GIS Best Practices

To maintain a collaborative environment amongst all jurisdictions in Lake County, it is imperative that jurisdictional leaders develop good business practices, both within each respective PSAP and within the team.

MCP recommends that team leaders be honest and focused on the mission of the PSAP, region, and state to provide the best emergency response for their communities. This includes developing an open dialogue with industry peers as well as local team members, regional team members, state officials, and local community members. MCP further recommends that PSAP leadership and GIS professionals in all jurisdictions stay informed regarding developments at the statewide and national levels with the Statewide 9-1-1 Bureau and Advisory Board, the Illinois State Police, and the Illinois GIS Association Committee, as well as NENA and APCO. Successes should be shared between PSAP leadership and GIS professionals.

GIS data maintenance is an ongoing process. It is important to take time when updating databases to ensure that all data is updated accordingly. For example, if a street name changes, care must be taken to update not only all affected road centerlines, but also all site/structure, MSAG and ALI records using the same street name. The USPS and the telephone company also must be notified regarding the street name change.

When adding a new site/structure and points and road centerlines, it is a best practice to flag the features or note that the location was not seen on the available imagery; after new orthoimagery is received, the added data can be double-checked for accuracy and any needed corrections made.

The following subsections identify best practices specific to road centerlines and address points

Road Centerline Best Practices

- All centerline records should contain range values for “From Address Left,” “To Address Left,” “From Address Right,” and “To Address Right” regardless of whether addressable structures exist on the centerline segment. Centerline segments not containing a range will not route properly if the CAD system can route calls based on location. There are certain cases where the range values can be zero (0), but generally, whole numbers must be used for these fields. Exceptions include limited access highways and cul-de-sacs where the inside value of the circle is zero.

- The “From Address” value should be lower than the “To Address” value. Depending on the CAD system and its associated routing functions, centerlines where the “From Address” value is higher than the “To Address” value may not be found by the system or an emergency vehicle may be routed inappropriately to that address. Any centerline records where the “From Address” value is higher than the “To Address” value should be corrected. Most likely, the centerline direction will need to be flipped, as well as all left and right values associated with the record.

- To avoid overlapping ranges, the “From Address” value of a consequent centerline must show an increase of two from the previous centerline’s “To Address” value. For example, if the first section of Sample St. ends at 133 and 134, the next section of Sample St. must start at 135 and 136. Exceptions to this rule are city-style block ranges, where each block starts at the hundred value, i.e., 100 and 101, then 200 and 201, etc.

- Both odd-range values must be either on the left or right side of the centerline, with even values on the opposite side. A mixed range (i.e., Left from Address = 101 and Left to Address = 150) is an error and must be corrected.

- It is important to have the correct topology across all GIS datasets. Topology is defined as how point, line and polygon features in a GIS share geometry, such as the spatial relationships between connecting and adjacent features.[17] Topology defines and enforces data integrity—for instance, road centerlines need to be connected where road segments share an intersection. Another example is where polygon features, such as PSAP boundaries or ESZs, are adjacent to each other; there should be no gaps between the boundaries. Roads that are also a boundary between two jurisdictions should match the same geometry as the jurisdictional boundary.

- Common topology errors include dangle errors (overshoots and undershoots), gaps and overlaps, and centerlines not being broken at intersections. Some exceptions include overpasses and underpasses where the centerlines should not be broken. In general, if one cannot access what appears to be an adjoining road at an intersection, the centerlines should not be broken.

Address Point Best Practices

- House numbers should fall within the range of the centerline segment from which the driveway is accessed and must be given the exact naming convention of the centerline segment. For “corner lot” structures where the front door is facing the street opposite of the driveway access, it is permissible to address from the front door providing there is accessibility for an emergency vehicle to park and use the front door.

- House numbers must be sequential, with odd numbers on one side of the street and even numbers on the opposite side of the street.

- House numbers should be whole numbers. House number suffixes such as ½ or R should be avoided.

- Addresses assigned to structure points/polygons in a structured dataset must match the address assigned by the telephone company in the ALI dataset, both by house number and street name. Every effort should be made to maintain consistency between these two datasets.

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[17] Dictionary of GIS Terminology, 2001 ESRI Press, page 101.

- New addresses should be approved by USPS prior to resident notification of their new address. Typically, regional USPS address management offices are charged with approving new addresses and will let the appropriate local post office know of the new delivery customer and assigned address. If the resident is not requesting mail delivery, it is still recommended that USPS is alerted of the new address.

- House numbers must validate within the MSAG database. This means that the house number must fall within the range assigned to the street centerline and follow the exact naming convention.

- In general, multiple-unit structures having individual outside doors (e.g., townhouses, strip malls) should be given separate house numbers. Multiple-unit structures where there is one main door and individual units have separate doors inside (e.g., apartment buildings, traditional malls) should be assigned one house number for the entire building and the individual units assigned apartment numbers (residences) or suite numbers (businesses). USPS does not like apartment or suite values to be alphanumeric, e.g., 1A, 201B. Numeric-only is preferred.

- Trailer courts may be addressed in one of two ways. The roads within the trailer court can be named and assigned ranges, with each trailer receiving an individual house number. Or, the entire trailer court can be given one house number and each individual trailer assigned a lot number. The recommended practice is to assign individual street names and house numbers for each trailer within the trailer court.

- When field-verifying a new structure point, take time to verify that surrounding house numbers and street signs are correct. Taking a laptop into the field is the best option due to the ease of using orthoimagery to help with location. Printing paper maps and taking them into the field is also an option.

- Encourage County residents to post their house numbers in a visible location.

Appendix G – Sample ETSB CAD IGA

A sample ETSB CAD IGA can be found on the following pages.

Remainder of this page intentionally left blank.

LAKE COUNTY/XXX INTERGOVERMENTAL AGREEMENT FOR USE OF THE LAKE COUNTY COMPUTER AIDED DISPATCH SYSTEM

This Agreement is made pursuant to the Constitution of the State of Illinois of 1970, Article VII, Section 10 and the Intergovernmental Cooperation Act, 5 ILCS 220/1 *et seq.*, between the County of Lake, a body politic and corporate, ("COUNTY") and the Village of a municipal corporation ("CONTRACTOR").

WHEREAS, the Emergency Telephone System Act, 50 ILCS 750/0.01 *et seq.*, authorizes units of local government to own and operate emergency telephone systems; and

WHEREAS, the COUNTY owns and operates, through its agency, the Lake County Emergency Telephone System Board (ETSB), a Computer Aided Dispatch System (CAD); and

WHEREAS, the CAD is an automated police and fire call dispatch system; and

WHEREAS, the CONTRACTOR seeks to contract with the COUNTY to utilize the CAD for dispatch purposes; and

WHEREAS, the CONTRACTOR is ready, willing, and able to pay for all costs associated with its use of the CAD; and

WHEREAS, the COUNTY and CONTRACTOR are authorized by the Illinois Intergovernmental Cooperation Act, 5 ILCS 220/1 *et seq.*, to enter into intergovernmental agreements, ventures and undertakings, to perform jointly any governmental purpose, or undertaking, either of them could do singularly.

NOW, THEREFORE, in consideration of the foregoing and the covenants contained in this Agreement, the parties agree that the CONTRACTOR shall be allowed to utilize the CAD subject to the following terms and conditions:

1. The CAD, its systems, programs, and reports shall remain the sole and exclusive property of the COUNTY.

2. The CONTRACTOR shall pay 100% of all direct actual costs associated with CONTRACTOR's use of the CAD including, but not limited to, report generation, licensing, mapping, geocoding, engineering, consulting, programming, hardware, software, cabling, interfaces, training, troubleshooting, maintenance and upgrades, related thereto. To the extent any such costs are incurred by the COUNTY, or the ETSB, the COUNTY shall provide an itemized invoice to the CONTRACTOR, and the CONTRACTOR shall pay on a monthly basis. CONTRACTOR's obligation to pay its costs shall survive any termination of this Agreement.

3. The CONTRACTOR shall have no direct CAD programming access, no right or ability to modify the CAD operating system, utilities or vendor software and no CAD system administration authority.

4. The CONTRACTOR shall have no right to work on, install, or have installed any software, programs, or the like on the computer hardware operating the CAD system.

5. In addition to the direct actual costs set forth in Paragraph 2 above, the CONTRACTOR shall pay, upon execution of this Agreement and on or before May 1st of each subsequent year that this Agreement remains in effect, additional annual costs of connection of $6,000. The CONTRACTOR shall have no right to connect to the CAD or otherwise access the CAD until CONTRACTOR has first paid in full its annual costs of connection.

6. The COUNTY, through the ETSB, shall retain exclusive rights and authority to program, modify, upgrade, administer and/or otherwise alter the CAD and its systems. The COUNTY shall provide reasonable notice to the CONTRACTOR of modifications, upgrades, or alterations to the CAD and its systems that are likely to impact the CONTRACTOR'S access to the CAD.

7. The COUNTY shall retain the exclusive right and authority to approve any additional agency or unit of local government that seeks access to the CAD and its systems through the CONTRACTOR. Any current or future agency or unit of government dispatched by the CONTRACTOR, or their agents, shall be required to enter into a separate intergovernmental agreement with the COUNTY for utilization of the CAD under such terms as the COUNTY may establish.

8. CONTRACTOR shall pay all invoices and monies owed hereunder in accordance with the Illinois Prompt Payment Act. Failure of the COUNTY to invoice CONTRACTOR in a timely manner shall not effect a waiver of CONTRACTOR's obligation to pay.

9. The CONTRACTOR shall designate in writing at the time of execution of this Agreement a single point of contact for all purposes relating to this Agreement, including queries, complaints, and invoicing.

10. The COUNTY or its designee through the ETSB, shall designate a primary contact person for receiving queries, complaints, and commendations for services provided under this Agreement.

11. The CONTRACTOR agrees to defend itself in any actions or disputes brought against the CONTRACTOR in connection with or as the result of this Agreement

and agrees to defend, indemnify and hold the COUNTY harmless and free from liability of any kind whatsoever resulting from the acts or conduct of the CONTRACTOR, their agents or representatives or employees in the performance of this Agreement or in the furtherance thereof. Further, the CONTRACTOR shall annually provide to the COUNTY a certificate of insurance detailing the actual coverages in force and effect during the term of this Agreement. The COUNTY, its agents and employees, shall be endorsed as additional insureds on applicable policies subject to this Agreement. The insurance shall provide for written notice to be sent to the COUNTY within 30 days of cancellation or material change of the coverages. The notice shall be sent to Department of Human Resources, County of Lake, 18 N. County Street, Waukegan, IL 60085, ATTN: Risk Manager. The initial certificate of insurance shall accompany the executed copy of this Agreement.

12. The term of this Agreement shall be from XXXX to XXXX provided, however, that either party shall have an absolute right to terminate this Agreement with or without cause upon 60 days written notice to the other. However, if the COUNTY terminates the Agreement without cause, CONTRACTOR shall be reimbursed a prorated portion of the prepaid annual costs of connection set forth in Paragraph 5 above to the effective date of termination. For purposes of this Paragraph, termination with cause includes, but is not limited to, nonpayment of any monies owed under this Agreement, breach or violation of any of the terms or provisions of this Agreement, violation of any COUNTY licensing agreement with any third party vendor, or misuse or unauthorized use of the CAD or its related programs and systems.

    After the initial term of this Agreement has expired, this Agreement shall automatically renew annually for additional one-year periods. During any renewal period, either party may terminate this Agreement with or without cause with written notice to the other party. If such termination occurs, the CONTRACTOR shall be reimbursed a prorated portion of the prepaid annual costs of connection set forth in Paragraph 5, above, to the date of termination.

13. The CONTRACTOR may accept the terms and conditions of this Agreement only by Resolution or Ordinance duly adopted by its legally recognized governing body or board.

14. All notices required herein shall be in writing, signed by or on behalf of the party giving or making such notice, and shall be sent by certified mail, postage prepaid, return receipt requested, to the following addresses:

    To COUNTY:

    Assistant County Administrator
    18 N. County Street, 9th Floor
    Waukegan, IL 60085

Copy To: LCETSB Coordinator
1300 S. Gilmer Rd.
Volo, IL 60073

To Municipalities:

The address for notice shall be changed by either party by giving notice in accordance with this paragraph to the last address specified herein.

15. The foregoing constitutes the entire Agreement between the parties.

16. This Agreement may be amended by mutual written agreement, signed and executed with the same formality with which this instrument was executed.

IN WITNESS WHEREOF, the County of Lake by a Resolution duly adopted by the County Board of Lake County, causes this Agreement to be signed by its Chairman and attested to by its Clerk, and the Village of , by order of its Board of Trustees, has caused this Agreement to be executed and attested to by the appropriate officials, all on the day and year written below.

COUNTY OF LAKE:

Date: _____ By: _____
Chairman, Lake County Board

Attest: _____
County Clerk

By: _____
Dave Dato, Chairman, LC ETSB

MUNICIPALITY OF :

Date:

Appendix H – Sample FATPOT MOU

A sample FATPOT MOU can be found on the following pages.

Remainder of this page intentionally left blank.

MEMORANDUM OF UNDERSTANDING REGARDING CAD INTEROPERABILITY

This memorandum of understanding is between the Lake County Emergency Telephone System Board ("Lake County ETSB"), an agency of the County of Lake, and XXXX the Emergency Telephone System Board (" ETSB") (together, the "parties"), and relates to the interoperability of the two ETSBs' computer-aided- dispatch systems. The memorandum will become effective when all the parties have signed it, and the date this memorandum is signed by the last party to sign it (as indicated by the date associated with that municipalities signature) will be deemed the date of this memorandum. This memorandum memorializes the procedures under which the Parties intend to cooperate to foster the interoperability of their respective CAD systems.

Recitals

WHEREAS:

- The parties each operate Emergency Telephone System Boards under the authority granted in the *Emergency Telephone System Act,* 50 ILCS 750/1 *et seq.*

- One of the purposes of the Act is to "encourage units of local government and combinations of such units to develop and improve emergency communication procedures and facilities in such a manner as to be able to quickly respond to any person calling the telephone number '9-1-1' seeking police, fire, medical, rescue, and other emergency services." 50 ILCS 750/1.

- One power the Act grants to ETSBs is the "Coordinating and supervising the implementation, upgrading, or maintenance of the [9-1-1] system, including the establishment of equipment specifications and coding systems." 50 ILCS 750/15.4.

- As part of its 9-1-1 system, Lake County owns, and the Lake County ETSB operates, a Computer Aided Dispatch System (CAD).

- Similarly, XXX Public Safety and the ETSB operate their own CAD system.

- Each party's CAD system is an automated police and fire call dispatch system utilizing computer access to share information.

- The Lake County ETSB has contracted with FATPOT Technologies, LLC, which is a company that provides software that enables proprietary CAD systems provided by different software companies, such as those used by these

parties, to communicate with one another.

- The Lake County ETSB's contract with FATPOT foresees a two-phase implementation, with Phase l enabling disparate CAD systems read-only access to each other's data, and Phase 2 enabling CAD systems both read-and-write access. The ETSB has not yet contracted for Phase 2 implementation, and this MOU relates only to Phase 1 capabilities.

Now, THEREFORE, THE LAKE COUNTY ETSB AND THE ETSB ESTABLISH THE FOLLOWING PROCEDURES:

1. The Lake County ETSB, under its contract with FATPOT, will supply software to the ETSB and will install and maintain the software so as to facilitate the read-only interoperability of the parties' CAD systems. Lake County ETSB will provide two PortalOne licenses at no cost to ETSB

2. The ETSB will allow network access to FATPOT so that FATPOT can install the necessary software on XX system.

3. The ETSB will designate an information technology specialist or appropriate CAD administrator to work with FATPOT in coordinating the software implementation.

4. The parties shall each bear their own costs for the purchase, implementation and maintenance of a data connection capable of transporting data to the FATPOT server and for Additional PortalOne licenses, and shall not seek reimbursement from the other for expense that may be required.

5. The parties agree to abide by the rules provided in the document *Sharing, Use, and Release of CAD and RMS Info by Outside Agencies,* which is attached to this MOU as Exhibit l.

6. The parties agree to operate under the procedures set forth in this MOU for the duration of the Lake County ETSB's contract with FATPOT. The current duration of the contract is two years, with anticipated annual maintenance, software and support renewals. The Lake County ETSB will provide notice if the contract is not renewed or is otherwise terminated.

7. The parties acknowledge that Freedom of Information Act (FOIA) requests must be responded to by the agency that created the data sought in the FOIA request, because the FATPOT system does not retain data and, therefore, cannot be used to retrieve data.

8. The Parties acknowledge that this memorandum of understanding memorializes the procedures under which the Parties intend to operate, but that they do not intend it to be interpreted as a contract enforceable in a court of law.

Signed:

LAKE COUNTY ETSB

By:_____

Title: Chairman

Date:

-Exhibit 1-

Sharing, Use and Release of CAD and RMS Information by Outside Agencies

I. POLICY

It is the policy of the Lake County ETSB to comply with all rules and regulations established by Federal, State, and local authorities regarding the access, use, storage, and release of confidential information obtained through various electronic means. Additionally, the ETSB supports the interoperability of the various data communications and information management systems employed by public safety agencies in and around Lake County for the purposes of providing a more efficient response to public safety hazards and to better protect the lives and property of the citizens of Lake County and its surrounding areas.

II. PURPOSE

The purpose of this policy is to set forth guidelines for the sharing of public safety related information between authorized agencies in and around the Lake County area and to provide for the protection of sensitive and protected information from access by unauthorized parties.

III. DEFINITIONS

A. CAD Fusion Product

A system of providing the ability to share information regarding active calls for service between CAD systems through the use of a specially designed integration system and various data communications methods

B. INFORMER

A web-based information reporting system operated by the Lake County ETSB to provide information on CAD system activity through user-defined report formats.

C. !STATUS

A web-based system monitor that provides information on current and historical CAD system activity.

D. Lake County CAD System

The Computer Aided Dispatch System funded by the Lake County Emergency Telephone Services Board which maintains information on police and fire incidents handled by member agencies.

E. LEADS

The Law Enforcement Agency Data System operated by the Illinois State Police which provides interagency communications both locally and through the nationwide NLETS system, as well as access to various law enforcement

information, Criminal History Information, Illinois Hot File s, Secretary of State registration and licensing information, and NCIC records through the use of land based terminals located at police agencies throughout the State.

F. Memorandum of Agreement (MOA)

A written agreement, executed between the ETSB and one or more public safety entities to provide for the sharing of data between CAD and /or RMS systems.

G. Mobile Data Systems

Wireless data systems that provide connectivity and information support between dispatch centers and the various emergency and non-emergency vehicles operated by public safety agencies.

H. Outside CAD Systems

Computer Aided Dispatch Systems funded by other public safety entities which maintains information on police and fire incidents handled by those agencies.

I. NCIC

The National Crime Information Center which is a clearinghouse of law enforcement related information including wanted and stolen files, hot files, and criminal history information. The NCIC is administered by the Federal Bureau of Investigations.

J. NLETS

The National Law Enforcement Teletype System which provides for interagency communications throughout the United States using land based terminals located at law enforcement agencies throughout the country.

IV. Data Sharing

A. Subject Matter

Pursuant to the requirements and restrictions outlined in this Policy, the Lake County ETSB and outside agencies will provide shared access to current and historical information regarding unit activity, CAD incidents, Geo-spatial and address-specific locations managed through their respective Computer Aided Dispatch Systems and/or interfaces.

This includes, but is not limited to the following:

- CAD interoperability using one or more CAD Fusion Products
- Mobile data messaging and access
- Current CAD incident status and detail information
- Historical CAD incident detail information
- Real-time map-based or tabular CAD incident and unit activity

- Ad-Hoc reporting of CAD/RMS information

Any and all information shared between one or more entities shall be solely for the use of that entity as necessary for the performance of that entities" official public safety duties.

B. Requirements

Prior to the implementation of any information sharing system between the Lake County ETSB and any public safety entity that is not a member or client agency of the Lake County ETSB as identified in this Policy, the following procedures must be completed:

- Execution of a Memorandum of Agreement between the Lake County ETSB and the public safety entity.

- Establishment of an information security and dissemination policy by the public safety entity that has been reviewed and approved by the Lake County ETSB Policy Committee.

C. Conflict Resolution and Termination

In the event of a conflict of policy between the Lake County ETSB and the public safety entity, a review committee consisting of representatives of the ETSB and one or more other public safety entities that have executed similar agreements shall be empaneled to mediate the issue to a successful conclusion.

In the event of a verifiable, serious breach of information security, either party may elect to withdraw permission to access their data systems until an acceptable problem resolution is achieved.

V. Restrictions on Access

A. Unauthorized Use

The Lake County ETSB and other Public Safety entities and their employees, agents and assigns are specifically prohibited from accessing any shared information provided under this Policy for any purposes other than as required during the performance of that entities" official public safety duties or for the purposes of administration, management or system maintenance.

B. Release of Information

Public Safety entities are specifically prohibited from releasing any shared information provided under this Policy to any person, individual or organization except for the following:

- Release to other personnel of that public safety entity as required during the course of that person's official duties; or

- Release to representatives of other public safety entities as required during the course of that person's official duties: or

- Release to prosecutorial or judicial officials as required during the course of the investigation , prosecution or other adjudication of an individual or offense; or

- As required by judicial order or subpoena.

C. Protection of LEADS Data

The Personnel Security Requirement for a LEADS agency requires conformance with 20 Illinois Administrative Code 1240.50. Generally, no person may provide maintenance or technical services at or near LEADS equipment unless they are of good character and have not been convicted of a felony or a crime involving moral turpitude under the Jaws of this or any other jurisdiction. Any persons may have their authority to provide maintenance or technical services at or near LEADS equipment denied if charged with a felony or a crime involving moral turpitude under the laws of this or any other jurisdiction (20 Illinois Administrative Code 1240.50(3).

1. AUTHORIZED LEADS RECIPIENTS

Access to LEADS requires qualification under the criteria set forth in 20 Illinois Administrative Code 1240.30. LEADS operators shall use the terminal only for those purposes for which they are authorized. The individual receiving a request for criminal justice information must ensure the person requesting the information is authorized to receive the data (20 Illinois Administrative Code 1240.50).

2. BACKGROUND AND TRAINING PROGRAM

All personnel authorized to process or release LEADS data shall be required to complete a background and training program prescribed by the Records Supervisor. The Training Bureau shall coordinate the course to provide training in the proper use, control, and dissemination of LEADS data (20 Illinois Administrative Code 1240.50).

3. RELEASE OF LEADS DATA

- The LEADS network and LEADS data shall not be used for personal purposes.

- Personal or unofficial messages shall not be transmitted.

- LEADS data shall not be sold.

- LEADS data shall not be disseminated to any individual or organization that is not legally authorized to have access to the information (20 Illinois Administrative Code 1240.80).

D. Computer Terminal Security

Each Public Safety entity agency must ensure that all computer devices having LEADS access are placed in a location under the direct control and supervision of authorized criminal justice personnel and are inaccessible to the public or persons not qualified to either operate, view, or possess LEADS and/or NCIC transmitted or received data. The computer site and/or terminal area must have adequate physical security to protect against any unauthorized personnel gaining access to the computer equipment or to any of the stored data (20 Illinois Administrative Code 1240.50).

E. Juvenile Records

Nothing in this procedure is intended to alter existing statutes, case law, or the policies and orders of the Juvenile Court regarding the release of juvenile offender records.

Appendix I – Sample Consolidation IGA

A sample consolidation IGA can be found on the following pages.

Remainder of this page intentionally left blank.

1 Agreement

Between

FOR THE OPERATION OF CONSOLIDATED SERVICES FOR PUBLIC SAFETY EMERGENCY COMMUNICATIONS SERVICES

WHEREAS, the State of Illinois has mandated the consolidation of Public Safety Answering Points (PSAPs) statewide; and

WHEREAS, the XXX on have filed a required consolidation plan, they are working with the parties of the *Regional 911 Consolidation Agreement* in the County to collaboratively partner for the eventual reduction of PSAPs; and

WHEREAS, the parties (hereafter referred to as a "Community" or collectively as the "Communities") has determined that consolidating would improve the emergency call-processing and dispatching; and

WHEREAS, the Communities desire to improve regional coordination and funding for the provision of quality emergency communication services; and

WHEREAS, all municipalities located within Lake County are invited to participate in the Consolidated PSAP; and

WHEREAS, the functions of the Consolidated PSAP is to provide all administrative and operational duties and services as generally accepted and necessary for the provision of emergency communications services; and

WHEREAS, the Communities have mutually determined that it is in the interest of all parties for the consolidation of emergency communications services into one service, to be overseen and managed by the Consolidated PSAP (hereafter referred to as the Host PSAP); and

WHEREAS, each participating Community will have representation on the Consolidated PSAP Advisory Board.

NOW, THEREFORE, the Communities, based on the mutual promises and considerations below, agree as follows:

2 Section 1: Purpose and Enabling Authority.

A. Purpose. The purpose of this Agreement is for the consolidation of emergency communications services, to include 911 call-taking, teletype, dispatching, and general administrations of services, under the oversight and management of XXX PSAP (Host PSAP).

B. Authority to Enter Agreement. This Intergovernmental Agreement is made by authority of [INSERT LEGISLATIVE REFERENCE]

3 Section 2: <u>Definitions.</u>

For purposes of this Agreement, the following definitions shall apply:

A. "Agreement" means this Agreement between the Host PSAP and a Community desiring to consolidate emergency 911 services.

B. "**Administrative Call"** means a call received in a Host PSAP that is not an Emergency Call or a Non-Emergency Call and is specific to a participating Community.

C. "**City Limits"** means the geographical areas of a Participating Community as they currently exist or as may be amended during the term of this Agreement or any Renewal Term.

D. "Contract Administrator" means the participating community Administrator or designee. The primary responsibilities of the Contract Administrator are to coordinate and communicate with the Host PSAP and to manage and supervise execution and completion of the Scope of Services and the terms and conditions of this Agreement as set forth herein. In the administration of this Agreement, as contrasted with matters of policy, all Parties may rely on the instructions or determinations made by the Contract Administrator; provided, however, that such instructions and determinations do not change the Scope of Services.

E. "Core Team" A team made up of members, or designees, of the [HOST AGENCY NAME] and Participating Community actively implementing a consolidation effort.

F. "[INSERT 911 AUTHORITY NAME]" is the authority that provides the total system approach to emergency communications management and training within the County.

G. " Emergency Call" means a call that requires immediate law enforcement, fire rescue, or EMS call for service dispatch, or a combination thereof.

H. "Host PSAP" means a facility providing the service and housing the equipment and personnel that provide E911 call-taking, teletype, and dispatching services for the regional emergency communications services and specifically designated by the [INSERT AUTHORITY] as a Host PSAP.

I. "Non-Emergency Call" means a call received in a Host PSAP that does not require an immediate response from law enforcement, fire rescue, or EMS call for service dispatch, or any combination thereof.

J. "Consolidated PSAP Advisory Board" means the Chartered governing body, created to provide guidance and advice to the Consolidated PSAP Director.

K. "Participating Communities" means the municipal corporation or corporations existing under the laws of the State of Colorado, located within Lake County that enter into an agreement with municipalities for participation in consolidated emergency communications services.

L. "PSAP" means Public Safety Answering Point, to include all functions, facilities, personnel, and equipment necessary to answer 911 calls.

M. "Consolidated Emergency Communications Center" means the consolidated call-taking, teletype, and dispatch functions of emergency calls and non-emergency calls, as defined herein, for police services, fire services, and EMS.

N. "Intergovernmental Partnership Agreement" means the intergovernmental agreement, which establishes the term, conditions, and financial obligations of entities participating in the consolidated emergency communications services.

O. "Subscriber Equipment" means mobile radio, portable radio, fixed station radio equipment, pagers, computers, mobile data terminals, and all equipment owned and/or operated by the receiver associated with dispatch services.

P. **"System Services"** mean the operational services performed by the Host PSAP consisting of consolidated call-taking, teletype, and dispatch functions of emergency calls and non-emergency calls, as defined herein, for fire services, emergency medical services and police services and the services and tasks related to the day-to-day operations of the Host PSAP, the system's PSAP location(s), and the hiring, training, supervision, direction, and discipline of operator's personnel.

Q. **"Teletype"** refers to **ICIC/NCIC** which means Illinois Crime Information Center and National Crime Information Center.

R. **"Transition Period"** means the period of beginning upon the execution of this Agreement and continuing through [insert a target date for full consolidation] as it relates to those participating communities.

4 Section 3: Scope of Services

A. The Host PSAP shall provide System Services as required in this Agreement and Appendix "A". The scope of services is a description of the Host PSAPs obligations and responsibilities and is deemed to include preliminary considerations and prerequisites, and all labor, materials, and tasks which are such an inseparable part of the work described that exclusion would render performance by the Host PSAP impractical, illogical, or unconscionable.

B. The Host PSAP and Participating Communities acknowledges that the Contract Administrator and the ADVISORY BOARD has no authority to make changes that would increase, decrease, or otherwise modify the Scope of Services to be provided under this Agreement.

C. The agreement with the Host PSAP shall establish benchmarks (Exhibit "B") that must be met by the Host PSAP and address the time by which the benchmarks shall be fully achieved.

5 Section 4: Term.

Term & Renewal. The initial duration of this Agreement shall be for a period of five (5) years from the date hereof, and thereafter shall be automatically extended for consecutive two (2) year periods unless terminated by the parties. In the event that any party desires to withdraw

A. Notice must be provided no later than one year prior to expiration of the then-current term.

B. **Termination.** Nothing in this agreement prohibits either community from terminating this agreement upon completion of the initial term, provided they provide a minimum of one year notice and the withdrawal shall take effect only as of the beginning of the succeeding fiscal year of the County, unless otherwise agreed between the parties.

6 Section 5: Fees, Charges, and Costs.

A. Charge for Service. Participating Communities agree to compensate the Host PSAP in a manner specified in Section 3, as compensation for work actually performed and pursuant to this Agreement. In subsequent years, the ADVISORY BOARD will work with the Host PSAP to develop a proposed budget for recommendation and approval by the XXX Consolidated. The Host PSAP shall provide for management, administration, and oversight of the regional emergency communications services; fund the capital and operational expenses of the services out of legally available Host PSAP funds.

B. Fee Structure:

a. **Initial Consolidation Impact Costs**
b. **Service Fee Pricing Structure**

C. Participating Community Costs. The following costs represent direct costs for equipment and/or services not provided by the Host PSAP that will remain Participating Community costs:

a. Maintaining non-emergent telephone lines and administrative telephone lines.
b. Maintaining call forwarding on non-emergent or administrative telephone lines to be answered by the Host PSAP.
c. Installation, operation, and maintenance of circuits, software, or equipment associated with alarms or transfer of automated records for a Records Management System (RMS) or Computer Aided Dispatch (CAD) terminals.
d. Installing, operating, and maintaining subscriber equipment and/or licensed frequencies.

D. Payments. An annualized quarterly payment based upon the approved or amended budget, for system services shall be payable to the Host PSAP at the beginning of each calendar quarter (January, April, July, October).

7 Section 6: Integration Planning

A. Core Team. The Host PSAP in collaboration with the participating Community must identify a Core Team for each consolidation. The Core Team shall develop a system implementation plan which shall provide for the transition of participating communities to a Host PSAP in a manner that will minimize adverse impacts on the system as a whole. Actions of this team will always be approached with the future consolidation of additional PSAP's into the Host PSAP in mind.

B. Authority. The Core Team is not designed to oversee the daily functions of the Consolidated PSAP. Daily functions of the Consolidated PSAP shall be under the direction of the [INSERT ENTITY], who reports to [INSERT ENTITY NAME].

C. Members of the Core Team: The Core Team will consist of representatives from the City of Consolidated and the consolidating Community. The City of Consolidated will hire a Project Manager, to be funded by the Host PSAP and the consolidating Community, for the purpose of managing this consolidation. Personnel assigned to the Core Team shall be compensated by their respective agency. The roles and responsibilities of the Core Team will be articulated in relevant project planning document.

D. Reporting. The Core Team will provide a written report regarding progress of each consolidation. This report will be delivered to the ADVISORY BOARD and the Lake ETSB. This report shall be furnished in August and January of each respective year, beginning in [insert month/year],

and will be a public record. Reporting shall continue until the consolidation effort is complete.

E. Termination of the Core Team: The Core Team is designed to be temporary and be in place until the end of the transition period. The Core Team, by its own mutual agreement, may terminate, or may accept other duties as mutually agreed upon. The Core Team, at request of the Host PSAP or participating Community may remain intact to collaborate on future implementations as additional consolidations take place.

8 **Section 7: <u>Consolidated PSAP Advisory or Executive Board</u>**

F. ADVISORY BOARD. The Host PSAP in collaboration with the participating Communities must identify representatives to service on the ADVISORY BOARD for each consolidation. The ADVISORY BOARD functions within the provisions of the ADVISORY BOARD Charter.

G. Authority. The ADVISORY BOARD is not designed to oversee the daily functions of the Consolidated PSAP. The ADVISORY BOARD is only advisory in nature. Decisions made by the ADVISORY BOARD are not binding on the Host PSAP.

H. Members of the ADVISORY BOARD: The membership of the ADVISORY BOARD is detailed in the ADVISORY BOARD Charter and will consist of representatives from the City of Consolidated and the consolidating Communities. Representatives assigned to the ADVISORY BOARD shall be compensated by their respective agency. The roles and responsibilities of the ADVISORY BOARD will be articulated in relevant Charter document.

I. Reporting. The ADVISORY BOARD will provide written reports in accordance with the Charter document.

J. Termination of the ADVISORY BOARD: The ADVISORY BOARD is designed to be permanent. The ADVISORY BOARD, by its own Charter agreement, may increase or decrease its membership, terminate, or may accept other duties as mutually agreed upon.

9 **Section 8: <u>Participating Community Emergency Communications Personnel.</u>**

A. Existing Employees. Subject to the conditions below, the Center Director will hire dispatchers that meet the qualifications standards adopted by the Board, from emergency communications centers of the parties to this agreement. A readiness program to assist current dispatchers to meet qualifications standards will be made available during the establishment phase of the facility.

B. It is the intent of this Agreement that the hiring of dispatch staff at participating agencies will take place, subject to the pay scales established for the Consolidated 9-1-1 Center, and with existing longevity and position level taken into consideration, among other things. Criteria which may render a participating dispatch center employee ineligible for County employment at the Consolidated 9-1-1 Center include, but are not limited to, the following:

i. Convicted felon or other significant information found on a criminal records check
ii. The employee has been determined "not eligible for re-hire" as a XXX employee
iii. Inability to pass a drug test
iv. Inability to pass a basic literacy exam
v. Education level which is not equivalent to a high school diploma or higher

C. Parties acknowledge that the participating Community has existing 911 emergency communications personnel who are competent and capable in performance of their job duties. Except where hiring criteria cannot be met, existing employees from the joining

agency will be offered full employment with the Host PSAP in the most equivalent role based on existing positions and current availability in the Host PSAPs Emergency Communications Center.

D. **Separation.** Participating Community employees will be required to separate from the participating Community employment and become employees of the Host PSAP.

E. **Years of Service.** Participating Community employees accepting employment by the Host PSAP will receive credit for their years of participating Community service. Joining employees will be integrated into a compiled seniority list and receive the appropriate selections with regard to shift scheduling on future shift and vacation bids. Transitioning employees time in service will also be considered for future promotional opportunities.

F. **Pay & Benefits.** Pay and benefits for employees accepting Host PSAP employment will be commensurate with new hires at the Host PSAP, with consideration of the employee's current participating community position, status, and years of service, similar to a lateral move. Transitioning employees' hourly rate of pay will not be less than their current rate. Once employment is accepted, these employees are subject to all City of Consolidated policies, and procedures, to include accrual of vacation and sick time as a new agency employee.

10 Section 9: <u>General Provisions.</u>

A. **Modifications**. This Agreement may only be modified upon written agreement of the Communities.

B. **Governing Law**. This Agreement is subject to and shall be interpreted under the law of the State of Illinois. Court venue and jurisdiction shall exclusively be in the Illinois District Court for Consolidated.

C. **Assignment**. No Community shall assign or otherwise transfer this Agreement or any right or obligation hereunder without the prior written consent of the other Community.

D. **Local Concern**. The Communities agree and acknowledge that the activities contained in this Agreement are matters of local concern only, and that the Communities have mutually joined together for the performance of the matters of local concern, and that nothing in this Agreement shall be construed as making any of the concerns covered herein matters of mixed or statewide concern.

E. **Independent Contractors**. The Communities agree that they stand as independent contractors in relationship to one another. Nothing in this Agreement shall be construed to create an employer-employee or any other sort of master-servant relationship between the Communities. Each Community remains responsible for all pay, benefits, employment decisions, and worker's compensation and other liabilities for its own personnel.

F. **Governmental Immunity**. The Communities recognize and agree that they are governmental entities, subject to the provisions of the [INSERT LEGISLATIVE REFERENCE]. Any provision of this Agreement, whether or not incorporated by reference, shall be controlled, limited, and otherwise modified so as to limit any liability of the Communities to the terms of the Agreement.

G. **Hold Harmless/Indemnification.** Each Community agrees to be responsible for its own liability incurred as a result of its participation in this Agreement. In the event any claim is litigated with respect to the enforcement of the Agreement, each party will be responsible

for its own expenses of litigation or other costs associated with enforcing this Agreement. No provision of this Agreement shall be deemed or construed to be a relinquishment or waiver of any kind of the applicable limitations of liability provided to each party by the [INSERT LEGISLATIVE REFERENCE]. The Host PSAP shall neither have, nor exercise, any control or direction over the manner and means by which the participating Community performs its obligations, except as otherwise stated in this Agreement.

H. Compliance with Laws. At all times during the performance of this Agreement, the Communities shall strictly adhere to all applicable federal, state, and local laws, rules, and regulations that have been or may hereafter be established.

I. Waiver. The Communities agree that the waiver of a breach of any term or provision of this Agreement shall not act as a second or subsequent waiver of the same term or any other term under this Agreement.

J. Entire Agreement. This Agreement, together with all exhibits attached hereto, constitutes the entire agreement between the Communities, and all other representations or statements made previously, verbal or written, are merged herein.

K. Headings. The headings of the several sections of this Agreement are inserted only as a matter of convenience and for reference and do not define or limit the scope or intent of any provisions of this Agreement. The headings shall not be construed to affect in any manner the terms and provisions of this Agreement or their construction.

L. No Third-Party Beneficiaries. It is expressly understood and agreed that enforcement of the terms and conditions of this Agreement, and all rights of action relating to such enforcement, shall be strictly reserved to its Communities, and nothing contained in this Agreement shall give or allow any such claim or right of action by any person or entity not a party to this Agreement. It is the express intention of the Communities that any person or entity not a party to this Agreement receiving a benefit under this Agreement shall be deemed an incidental beneficiary only.

M. Severability. The terms of this Agreement are severable. Should any term or provision of this Agreement be declared invalid or become inoperative for any reason, such invalidity or failure shall not affect the validity of any other term or provision of this Agreement, to the extent that it is still capable of being performed within the Communities' intentions.

N. Subject to Annual Appropriations. Consistent with [INSERT LEGISLATIVE REFERENCE], any financial obligations of the participating Community not performed during the current fiscal year are subject to annual appropriation, and thus any obligations of the participating Community hereunder shall extend only to monies currently appropriated and shall not constitute a mandatory charge, requirement, or liability beyond the current fiscal year.

O. Records and Compliance. The Host PSAP will maintain records regarding calls and dispatch, in compliance with the Host PSAP records retention requirements and Illinois state law.

P. Compliance with Federal Law. The Host PSAP will provide services related to emergency communication that will assist the participating Community in compliance with any federal law, Memorandum of Understanding (MOU), or agreement applicable to law enforcement agencies; such as Immigration and Customs Enforcement (ICE) notifications.

i. **Confidentiality**. The Host PSAP shall keep all records and information confidential and comply with all laws and regulations concerning confidentiality of information.

ii. **Notification.** The Host PSAP shall notify its agents, employees and assignees that may come into contact with records that arise out of the emergency communication center and its duties relating to the participating Community that the information shall remain confidential and is subject to the confidentiality requirements set forth by policy and Illinois state law.

iii. **Use, Security, Retention and Distribution**. Confidential information of any kind shall not be distributed or sold to any third party or used by the Host PSAP or its agents in any way, except as authorized by the Agreement and as approved by the participating Community. The Host PSAP shall provide and maintain a secure environment that ensures confidentiality of all records relating to a participating Community and other confidential information wherever located. Records may be used for training and quality assurance purposes. Confidential information shall not be retained in any files or otherwise by the host PSAP or its agents, except as set forth in this Agreement and approved by the participating Community. EXHIBIT F outlines services to be provided by the host PSAP with respect to maintenance of records.

The host PSAP shall be the record holder and administrator for all records generated out of the Emergency Communications Center. The host PSAP will supply records as outlined in Exhibit F.

Q. Amendment of Agreement. This Agreement may be amended only upon the consent of the participating Communities. Amendment must be put in writing and signed by participating Communities.

11 **Section 10: <u>Notices</u>**.

A. General Notices. Any notice required to be given under this Agreement or related to the overall terms of this Agreement shall be in writing and shall be either personally served upon the other Community or sent by certified U.S. mail, return receipt requested. The following individuals shall serve as the contacts for notice under this Agreement:

<u>For the host PSAP</u>:
[INSERT CONTACT]

<u>For the Participating Community:</u>
[INSERT CONTACT]

IN WITNESS WHEREOF, the [INSERT ENTITIES] have executed this Agreement as written above.

APPROVED: APPROVED:

[INSERT SIGNATORES]

12 EXHIBIT A
Scope of Services

A. The functions of the Host PSAP are to provide all administrative and operational duties and services as generally accepted and necessary for the provision of Emergency Communications Services, to include the following:

a. Act on behalf of the participating Community as the Public Safety Answering Point (PSAP) and coordinate with the Consolidated Advisory Board and Lake ESTB to ensure that Participating Community citizens receive the very best possible services when dialing 911.
b. Answer all 911 calls originated within the participating Community geographical limits and/or Police and Fire designated response areas on a continuous twenty- four (24) hour a day three hundred sixty- five (365) day a year basis
c. Answer non-emergency calls intended for the participating Communities' public safety and non-governmental entities as identified in this Intergovernmental Partnership Agreement (e.g. Police, Fire, Public Works) on a three hundred sixty-five (365) day a year basis.
    i. Non-emergency calls may be answered by an automatic answering device during periods of high call volume and placed on hold until call takers are available to assist the customer.
d. Dispatch police and fire calls for service based upon the host PSAP's policies and procedures, national standards and best practices including but not limited to:
    i. [INSERT POLICIES]
e. Under most scenarios, call taking and radio dispatching are separate functions. Communities acknowledge that, when the Host PSAP is short-staffed, call takers may dispatch and vice-versa.
    i. The primary telephone positions are responsible for handling incoming telephone calls, both emergent and non-emergent.
    ii. The primary police radio dispatcher is responsible for dispatching units, maintaining communication, recording times and comments.
    iii. The fire dispatcher dispatches the fire and medical calls for service, while a call taker is processing the call for service.
f. Maintain participating Community Police and Fire Department response plans provided by the participating Community in the Computer Aided Dispatch (CAD) system.
g. Provide after-hours notification to participating Community governmental entities and their personnel as identified (e.g. Public Works on-call personnel in accordance with established procedures, as provided by the participating Community.)
h. Provide the citizens of the participating Community with the services of a nationally accredited communications center accredited by the International Academy of

Emergency Dispatch (NAED).

i. The participating Community Fire radio(s) shall be programmed with the talk groups utilized by the participating Community Police talk groups and vice versa.
j. Paging and radio transmission content shall be consistent with FCC regulations concerning use of Public Safety frequencies.
k. The Host PSAP shall be responsible for scheduling and assigning of personnel servicing this Agreement.
l. Emergency 24-hour support for subscriber equipment is not included in this Agreement, as it is supplied by the Lake County.
m. The Host PSAP shall not be liable for claims or damages caused by communications failures.
n. Maintain and own all records created by the Host PSAP.
o. Support for functions and services or equipment not identified in this Agreement shall be arranged in advance on a case-by-case basis with the Host PSAP, the Contract Administrator and/or the ADVISORY BOARD representative for the Participating Community.
p. The items in this scope of work may be modified from time to time, as needed, by mutual agreement between the Host PSAP and the participating Communities. If modification is made, the modification shall be in writing and signed by all Communities.

K. Reports. Through an automated system, by fax, email or other means, the Host PSAP will provide the following reports to the participating Community on the schedule indicated:

a. Daily - Case Number Log
b. Monthly - Calls for Service
c. Annual - Reports, as necessary, to comply with United States Immigration and Customs Enforcement Office (ICE) requirements
q. Other - Reports as reasonably needed and/or requested, if possible within the confines of the existing data management
r. Stolen license plates, vehicles, guns and missing person's entries will be maintained by The Center for purpose of providing 24-hour validation of inquiries made. The documentation will be forwarded to the filing agency upon recovery and completion of the validation and removal process from ICIC/NCIC in the form of a PDF file to an email address provided by the receiving agency.

L. Complaints. The Host PSAP shall be responsible for handling all complaints relating to delivery of service and performance of the System and shall provide a detailed response to the participating Community. The Host PSAP shall provide to the ADVISORY BOARD on a monthly basis a report detailing the issue and response to each complaint it has received regarding System Services. The Host PSAP and ADVISORY BOARD shall develop an action plan to address complaints.

M. Change Management. The Host PSAP shall be responsible for handling all change management requests relating to delivery of service and performance of the System and shall provide a detailed response to the participating Community. The Host PSAP provide to the ADVISORY BOARD on a monthly basis a report detailing the status of each change management request it has received regarding System Services. The Host PSAP and ADVISORY BOARD shall develop a change management request process.

N. Declared Emergencies. During periods of a declared state or local emergency as authorized by law, the Host PSAP shall take all necessary steps to ensure that adequate personnel are

available to properly perform the requirements of this Agreement and shall coordinate its activities with the participating Community.

13 EXHIBIT B
Performance Standards

A. Performance. The performance of the Consolidated PSAP will be based on the lifecycle of an emergency call for calls received on the emergency lines (911 lines).

- PS1 - 911 call answer time
- PS2 - Time from call answered to call entered in cad (and forwarded to dispatcher)
- PS3 - Time from CAD entry until a unit is dispatched
- PS4 - Time from unit dispatched until unit arrives on scene
- PS5 - Time from unit arrives on scene until incident is closed

a. To ensure the performance of the Consolidated PSAP is evaluated in a reasonable manner, performance standards have been separated based on a transition and post-transition period.
b. Performance Standards ("Standards") will become effective at such time the participating Community is designated, in writing, by the Host PSAP as having been migrated to the consolidated system.

B. Transition. The following Standards will be utilized to track the efficiency and operational performance of the regional system on a monthly basis during transition phase:

a. Communication personnel shall be certified by the International Academy of Emergency Dispatch as the Host PSAP migrates to all three disciplines.

C. Post Transition.

a. **Call Processing**
   i. Calls for service presented on 911 trunks shall be answered by the 2nd ring under most circumstances.
   ii. Emergent calls for service will be entered reflecting the location and type of incident within 30 seconds under most circumstances.
   iii. Non-emergent calls for service will be answered based on availability of dispatchers and may go into an auto-answering queue.

14 EXHIBIT C
Staffing

A. Staffing

a. The Host PSAP shall provide and employ the civilian personnel, in the appropriate number to align to the hourly call data and the staffing model to perform system services.

b. Using staffing analytics, the Host PSAP will establish staffing levels and schedules that allows the Host PSAP to maintain minimum staffing requirements to meet the performance standards outlined in this agreement.
c. Using staffing analytics and call handling statistics, staff appropriate number of certified Emergency Medical Dispatch (EMD) personnel on each shift.
d. Under most scenarios, call taking and radio dispatching are separate functions. Communities acknowledge that, when the Center is short-staffed, call takers may dispatch and vice-versa.
e. The Host PSAP shall ensure that its employees receive the training required to perform their jobs in a manner consistent with the terms, conditions, obligations, goals and requirements of this Agreement. During the transition period all employees performing System Services shall be trained to maintain their present level of services (call-taking, dispatching, and teletype processes). Post transition period, all employees performing System Services shall be provided the opportunity to be trained on call taking, dispatching, and teletype processes.

15 EXHIBIT D

Standard Operating Procedures

a. The Host PSAP will process calls for service using agreed upon call taking, police, and fire dispatching duties, standards, and protocols.

b. **Call Processing**
   a. Calls for service coding is based on the information provided by the caller during the interview.
   b. Calls for service will contain information provided by the caller based on a series of pre-defined questions appropriate to the problem coding.

c. IAED
   a. Medical calls will be processed on the Priority Dispatch System. The responding units will receive the determinant by radio, as a second notification if it's not available at the time of the dispatch.

d. Police Dispatching
   i. High priority calls will be dispatched to available officers and those assigned to “lower priority calls".
   ii. Calls for service will be dispatched based on priority and availability of officers.
   iii. Calls for service will be time tracked by the police dispatcher.
   iv. Calls for service will contain information provided by the officer.
   v. Officers may request information on prior events, premise information, caution notes and other information deemed to be an officer safety issue by radio as recorded in the Computer Aided Dispatch System.
   vi. Whenever possible, group pages shall be accomplished by using a single cap-code page, Active 911 and/or the 911 software.
   vii. Contacts requiring vehicle tows will be provided for the towing service based on municipal contracts or direction by the officer.
   viii. Entries related to tows will be assigned a case number or incident number as determined by this Agreement. An impound log will be maintained by communications personnel to track impounded vehicles.

e. Fire Rescue Dispatching
   i. Emergency Fire and medical calls for service will be dispatched in accordance with NFPA 1221 (7.4 Operating Procedures) 2013.

ii. [INSERT HOST AGENCY NAME] will ensure that all policies & protocols observed will not do anything to decrease current ISO ratings.
iii. All unit activities will be tracked by the fire dispatcher.
iv. Requests for mutual aid assistance and notifications will be recorded in the call for service, tracked and date time stamped by the dispatcher.
v. The dispatcher will make notifications of responder safety hazards when dispatched.
vi. New premise and hazard information will be entered into the CAD system at the request of the [AGENCY] Fire Department Chief or their representative.
vii. If a paging problem is suspected, test pages will be performed by communications to troubleshoot. The Center is not responsible for sending out pages other than for actual calls for service, i.e.; center will not send training or meeting notifications.
viii. OEM, weather, and operation needs will be paged according to standard operating procedure.

f. Teletype

i. Stolen vehicle entries into the XXXX/NCIC system will be completed after the request for the case number and according to standard operating procedures.
ii. Missing person entries will be entered into the XXXX/NCIC system will be completed within two hours of report, with the information available, to meet the National Missing and Exploited Children requirements. Entries may be made using the incident number assigned to the call pending the issuance of a case number.
iii. Stolen license plate entries into the XXXX/NCIC system will be completed after the request for the case number and availability of dispatchers.
iv. Broadcasts for stolen vehicles will be made if the vehicle was stolen within the last 6 hours to the routing of [INSERT AGENCIES].
v. All towed vehicles entered into the XXXX/NCIC system will be completed after the request and availability of dispatchers.
vi. Stolen gun entries into the XXXX/NCIC system will be completed after the request for the case number and according to standard operating procedure.

Appendix J – FGM Architects' Study

The program lists can be found on the following page. The full FGM Architects' study is available from the Consortium project manager.

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PROGRAM LISTS

Lake County
911, EMA and ETSB Planning Study
Space Needs Program - Current 911 Coverage for County
(8+1 Dispatch Positions)

Room/Area/Space	Square Feet
PUBLIC ENTRY / SHARED PUBLIC ACCESS AREAS	537
911 DISPATCH CENTER	5,576
EMERGENCY MANAGEMENT AGENCY	5,377
EMERGENCY TELEPHONE SYSTEMS BOARD (ETSB)	2,124
SHARED STAFF SUPPORT AREAS	3,537
SHARED MECHANICAL AND ELECTRICAL SPACES	2,552
TOTAL BUILDING AREA REQUIRED	**19,702**

REPLACEMENT OPTION

Lake County
Consolidated 911, EMA and ETSB Planning Study
Space Needs Program - 24 Dispatch Positions + 2 Supervisors

Room/Area/Space	Square Feet
PUBLIC ENTRY / SHARED PUBLIC ACCESS AREAS	537
CONSOLIDATED 911 DISPATCH CENTER	13,103
EMERGENCY MANAGEMENT AGENCY	5,377
EMERGENCY TELEPHONE SYSTEMS BOARD (ETSB)	2,124
SHARED STAFF SUPPORT AREAS	4,274
SHARED MECHANICAL AND ELECTRICAL SPACES	2,822
TOTAL BUILDING AREA REQUIRED	**28,237**

PSAP CO-LOCATION / CONSOLIDATION OPTION