

2019 911 ANNUAL REPORT



IOWA DEPARTMENT OF
HOMELAND SECURITY AND
EMERGENCY MANAGEMENT

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Introduction

The Iowa Department of Homeland Security and Emergency Management (HSEMD) submits this 911 annual report to the Iowa General Assembly pursuant to Iowa Code § 34A.7A (3) (a). This section of the Code requires the 911 program manager to advise the General Assembly of the status of 911 wireline and wireless implementation and operations, the distribution of surcharge receipts, and an accounting of revenue and expenses of the 911 program.

Iowa's 911 system consists of 113 public safety answering points (PSAPs) across 99 counties. The PSAPs answer wireline, wireless, and VOIP emergency calls, as well as Text-to-911 messages from across the state. The wireline 911 system was launched in Iowa in 1988 and is managed by local 911 service boards. The funding to support the system is obtained through local contributions and a landline phone surcharge authorized by Iowa Code § 34A. Wireless 911 capability was added to the system beginning in 1998. It is funded through a wireless surcharge on wireless phone users' monthly bills and is managed by the Iowa Department of Homeland Security and Emergency Management pursuant to Iowa Code § 34A. Recently, the Department converted the wireless 911 network from analog technology to an emergency services Internet Protocol (IP) network (ESInet) referred to as a Next Generation (NG) 911 network. From Oct. 1, 2018, through Sept. 30, 2019, the NG911 network processed 942,486 wireless 911 calls and 1,714 texts to Iowa's PSAPs. Local jurisdictions reported 215,312 wireline calls, and 30,057 voice over Internet protocol (VoIP) calls. Local PSAPs are the primary users of the NG911 network and answer and dispatch resources for more than 98 percent of all wireless 911 calls in Iowa. The Iowa Department of Public Safety (DPS) handles the remainder of the wireless 911 calls.

As mentioned above, the wireless portion of the



911 system is currently undergoing a significant upgrade to an IP-based system. The first phase of a multiphase effort into what is called the NG911 network has converted analog/copper trunking into the local PSAPs to a statewide, IP-based Ethernet network. The IP-based backbone was completed in November 2012, and leverages the Iowa Communications Network (ICN). The second phase of the network upgrade is nearly complete and includes updating individual PSAPs to IP-enabled call-handling equipment and logging recorders. Ninety-two percent of the state's PSAPs are fully end-to-end IP-enabled. As of January 2019, all but one of the local 911 PSAPs are capable of receiving Text-to-911. Work has also begun toward the State's virtual consolidation efforts, technologically merging the legacy wireline network with the Next Generation IP-based network, as well as sharing technology for call processing equipment at the PSAPs.

Iowa Code § 34A requires that each county in the state establish a joint 911 service board that has authority over the local PSAP. Each board has the responsibility to develop a countywide 911 service plan, detailing the manner and cost for the implementation of a wireline and wireless 911 system for the PSAP geographical area. As of today, all 99 counties have approved countywide 911 service plans.

Legislative Updates to Iowa Code

The Iowa Department of Homeland Security and Emergency Management has the responsibility to review and approve the countywide 911 service plans. HSEMD is also responsible for the overall administration of Chapter 34A through a program administrator appointed by the HSEMD director.

Legislative Updates to Iowa Code

During the 2019 legislative session, the following changes were made to the Iowa Code with the passing of House File 516:

- Added the county sheriff as a voting member on joint 911 service boards
- Added the police chief of each city operating a PSAP as a voting member on 911 service boards



Virtual Consolidation Update

Iowa Acts 2018 House File 2254 directed HSEMD to implement the plan for virtual consolidation. This plan does two things, detailed below, which combined are projected to save local jurisdictions \$6 million.

The first effort is the merging of the wireline 911 network with the Next Generation 911 network. Iowa has continued to maintain two different 911 networks which do not interface with each other. Technology currently exists to merge the wireline and wireless networks into a single 911 system. HSEMD is working with the ICN and the Next Generation 911 core services provider (Comtechtel Systems or Comtech) to implement the changes to deliver wireline 911 calls over the ESInet. Changes to the way automatic location information (ALI) and automatic number information (ANI) is handled must be configured into the new combined system. PSAP migration to the merged network is expected to begin in spring of 2020 and be completed by fall of 2020.

The second effort is the introduction of shared technology within the PSAPs. The main effort is to share call processing equipment (CPE), and also allow for sharing of logging recorders, mapping, computer aided dispatch, and emergency medical dispatch. The above are components of a PSAP that formerly needed to be physically housed in each PSAP at a great cost to the State and/or PSAP. However, through technological advances, the entire state can conceivably share this equipment. To this point, 10 of the state's PSAPs have been converted to this shared environment with another 11 having signed agreements to begin the conversion process (Attachment 2).

Next Generation 911 Network

Prior annual legislative reports have detailed the configuration of the disparate legacy wireline network and the NG911 wireless network. The following

National 911 Grants

Iowa was awarded a grant in the amount of \$2,590,445 by the National 911 Office, which is a part of the National Highway Transportation Safety Administration. The grants were available to states and tribes based on interstate mileage and population, and they were awarded for the benefit of PSAPs and states to further Next Generation 911 efforts. The grant closes in March of 2022 and will be used to help fund the virtual consolidation efforts discussed in this section. The grants come with a 40 percent match, which will be funded by surcharge. Find out more information about the [grant program](#).

section describes the environment of the new combined network, which should be in place by fall of 2020.

There will be minimal changes on the wireless side as part of the merged network environment. Originating service providers will still ingress the Comtech-managed call logic centers (CLCs) located in Davenport and West Des Moines. From there, calls are transported via the ESInet for proper call delivery to PSAPs.

Wireline traffic will be routed from the CenturyLink selective routers to ICN aggregation points located in Des Moines and Cedar Rapids. The ICN will transport the traffic from those aggregation points (via disparate and redundant paths from the ESInet) to the Comtech CLCs. At that point, wireline 911 traffic will be delivered to the PSAPs similarly to wireless 911 calls. Wireline 911 traffic will now enjoy the benefits of automatic call reroutes in the case of outages

Virtual Consolidation Update

or maintenance as wireless 911 has for years. As with wireless 911, wireline 911 will be able to be transferred to any PSAP across the state.

As referenced above, wireline ALI and ANI will be provided in a new methodology. Historically, PSAPs have contracted with a third party vendor to maintain and provide ALI/ANI as part of a 911 call. In the new environment, ANI/ALI will be part of the State 911 system, rather than being contracted by PSAPs to a third party. The new methodology aligns with the concept of Next Generation 911. HSEMD and Comtech are working with local exchange carriers (LECs) to begin this new provisioning methodology.

The State 911 system is interconnected through ESInet. All 113 local and Iowa Department of Public Safety primary PSAPs (Attachment 1) are connected via the ESInet. The brains of the ESInet are the two redundant CLCs connected by 50 MB circuits to handle the call volume and call routing. While the ESInet primarily uses fiber from the ICN, the CLCs, State equipment in the PSAPs, and the policy call routing and handling functions are managed through a contract with Comtech. The Comtech contract is entering year nine of a 10-year maximum contract.

Figure 1 below outlines some of the differences between enhanced and Next Generation 911.

HSEMD and Comtech have continuously worked to upgrade the software and programming at the data centers for the way calls are delivered via IP. These upgrades use the National Emergency Number Association (NENA) i3 standard for call delivery. The ultimate goal of these upgrades is a NG911 network that will ultimately support the use of text, video, and picture messaging to 911. Once multimedia messaging services (MMS) become available from the wireless carriers, and are capable of being processed and displayed by the PSAPs call taker equipment, they will be implemented in Iowa.

Public Safety Answering Points

As of Dec. 31, 2019, all of the state's 113 PSAPs have upgraded their call-handling equipment to NG911-capable.

These 113 PSAPs are now technologically capable of receiving network-delivered IP-based calls. Of the 113 PSAPs with upgraded equipment, 107 PSAPs are truly receiving end-to-end IP-enabled wireless calls over the ESInet all the way to their call-taker screens. In the remaining cases, additional local software upgrades or the purchase of an IP-capable logging recorder may be needed before migration to a true IP-based call environment is possible (Attachment 3).

E911	NG911
<ul style="list-style-type: none">◆ Analog-based call delivery◆ Analog call-processing equipment◆ Phase I-based call routing◆ Phase II-based caller location◆ Manual call rerouting for maintenance & outages◆ Selective routers for call delivery◆ No capability for text, pictures, or video	<ul style="list-style-type: none">● IP-based call delivery● IP-based call-processing equipment● GIS-based call routing● GIS pinpointing of caller location● Multiple automatic, diverse paths for maintenance & outages● Policy-routing functions w/in the data centers for call delivery● Can transmit text, images, and video to 911

Figure 1

Virtual Consolidation Update

Redundancy and Secondary Network

Realizing the need for additional redundancy, HSEMD began a project with Comtech to provide additional safeguards in the event of a statewide or large regional outage of the ESInet. Thirteen of the largest PSAPs were identified to act as part of a secondary ESInet. Completely diverse fiber, circuits, and State systems were used to build this second network, separate from the primary ICN backbone. Currently, HSEMD along with its vendor partners have established redundant connectivity to 11 of the 13 PSAPs. Those 11 PSAPs continue to receive their wireless calls in the case of a large outage or maintenance.

HSEMD is working with all of the PSAPs in the next phase of the project which would include the alternate routing of calls from the regular, single-connected PSAPs to the large, redundant PSAPs in the case of a large outage. In effect, this creates regional

back-up facilities. There are significant planning, coordination, and procedural efforts that go into this concept. Not only must the 911 call ring into a regional back-up facility, but then the call must be quickly dispatched. The statewide NG911 GIS mapping and aerial photography projects discussed later in the report help facilitate the dispatch of the calls. HSEMD is also working with the Iowa State Interoperable Communications System to ensure there is appropriate radio communication between PSAPs. HSEMD has dedicated \$450,000 in homeland security grant funding—separate from the 911 surcharge—to ensure PSAPs have access to the statewide radio system.

Geographic Information Systems and NG911

A critical component of NG911 relies on geographical information system (GIS) data. The data is the foundation of Next Generation call routing, location validation, and emergency response. Information shar-

Text-to-911

In an effort to facilitate the more rapid deployment of Text-to-911, HSEMD contracted with six call-processing equipment vendors to implement Text-to-911 in the PSAPs. This contract was put in place where existing vendor or customer relationships existed, and merely seeks to fund and centralize the rollout of the service statewide. Text-to-911 has been shown to save lives in other states in incidents including home intruders and domestic violence, and is instrumental for the deaf and hard-of-hearing community. In Iowa, positive outcomes have been achieved through the use of Text-to-911. Currently, 112 PSAPs representing 98 of Iowa's 99 counties are able to receive Text-to-911, as shown in Attachment 3. New this year, PSAPs are also able to transfer Text-to-911 to another PSAP. This is especially important for the three DPS PSAPs and where there are multiple PSAPs in the same county.



Virtual Consolidation Update

ing is essential to building statewide GIS datasets, as more than 100 different data owners need to share information for the NG911 system. Data sharing work starts with the local jurisdictions updating their master street address guide, road centerlines, and site structure address points in order to have a seamless, statewide GIS data set. While HSEMD had previously contracted for the statewide aggregation portal, ensuring the data is up-to-date and accurate is a critical local responsibility. Iowa Acts 2017, Senate File 500, allowed HSEMD to provide local GIS grants to assist local 911 service boards in the creation, improvement, and maintenance of their NG911 GIS information. For FY 2019, HSEMD granted \$1,140,000 per PSAP to local 911 services to help facilitate this critical local data. In order to continue improving the data, HSEMD increased the benchmarks to:

- Overall NG911 GIS accuracy at or above 98 percent and submission of all required data layers (no change from FY 2019)
- Automatic location information synchronization to GIS road centerline accuracy of 95 percent or above (from 50 percent in FY 2019)
- Provide updated information twice, in two six-month periods

For FY 20 through December 2019, HSEMD has granted at a statewide level \$390,000 total (Attachment 4).

HSEMD, with support from GeoComm Inc., has developed and updated statewide NG911 GIS standards for Iowa. A committee of local GIS partners continues to assist with ongoing review and revision of the standards. The standards and GIS database schema provide a template and direction for the NG911 GIS community. Local GIS data feeds the statewide GIS portal, which is available for all PSAPs to share common data and location information available

through the mapping systems at the PSAPs. HSEMD and GeoComm continue to work on assessing local data and providing reports where GIS data corrections or updates are needed. GeoComm is serving the Iowa NG911 GIS portal allowing the locals to upload their GIS data and view all of the other datasets in Iowa. HSEMD will continue to work with GeoComm. GeoComm will continue to process the data and aggregate the information for use in the statewide NG911 GIS system.

911 Operating Surplus Funds Available to Local 911 Service Boards

HSEMD is allowed to maintain an operating surplus fund—surcharge funds not immediately expended toward quarterly remittance to local service boards and network costs. Iowa Acts 2016 House File 2439 modified the funding available to local 911 service boards. The act created consolidation grants for PSAPs wishing to physically consolidate. A maximum of \$200,000 (with a local match) is available for actual costs related to the combining of answering points. PSAPs have had the opportunity to apply for the physical consolidation grant for the past four years, and no PSAPs have applied. The grant program remains available through 2022.

The same act also provided \$100,000 annually available for 911 Council travel, 911 public education, and training for 911 professionals. Since this program became available in FY16, \$244,011 has been used in the training of more than 2,000 911 professionals. To date, \$69,000 has been approved for public education efforts, and \$16,080 has been used for 911 Council travel.

Finally, the act directed HSEMD to pass through any remaining surplus funds to PSAPs equally. For FY 2019, \$3.6 million was passed through to local 911 service boards, an amount of \$31,852.76 per PSAP.

Subscriber Surcharges and Distribution

Funding for the wireline and wireless portions of the 911 system are set in Iowa Code § 34A.7 and 34A.7A, respectively. In July 2013, the General Assembly set the surcharge for both wireline and wireless 911 services at \$1 per month per access line across the entire state. The wireline surcharge is deposited in the local 911 service fund and disbursements are made by the local 911 service board. The wireless surcharge is deposited in the State 911 Emergency Communication Fund administered by HSEMD. For the 12 months ending with Sept. 30, 2019, the wireless surcharges totaled \$28,398,247, an increase of \$965,798 from the same time frame the previous year.

Iowa HSEMD has the responsibility to order the implementation of the surcharge with each telephone service company providing landline service within the 911 service area. Within the state, there are 175 competitive local exchange service providers. Each local telephone service provider remits collected surcharge funds directly to the respective local 911 service board on a quarterly basis. In FY 2018, the total of wireline surcharges was \$9,980,018, a decrease of \$829,419 from the previous year.

Prepaid Wireless and VoIP Surcharges

In 2012, Iowa Code § 34A.7B authorized a surcharge on prepaid wireless phone transactions. The prepaid surcharge is remitted to the Iowa Department of Revenue, which transfers all remitted prepaid wireless 911 surcharges to the state treasurer for deposit in the 911 emergency communications surcharge fund. In 2013, Iowa Code § 34A.7A was amended to allow the prepaid wireless surcharge to increase or decrease proportionately to the wireless surcharge. As a result of that change, the prepaid surcharge is currently 51 cents per prepaid transaction, and the total revenue generated for this surcharge for the 12 months ending Sept. 30, 2019, was \$2,050,363. This is \$146,879 less than the same time frame the previous year.

In 2012, the definition of a communication service provider in Iowa Code § 34A.2 was amended to include service providers that transported information over the Internet, including voice over Internet protocol companies. The companies are now required to collect and remit surcharges as a communications service provider.

Cable television companies that sell static VoIP services as part of a bundled package also pay their collected surcharges to the local wireline 911 service boards. Nomadic VoIP providers (e.g. Vonage) that are not restricted to a particular location pay the surcharges assessed to their customers to HSEMD through the state 911 emergency communications service surcharge.

Wireless Surcharge Distribution

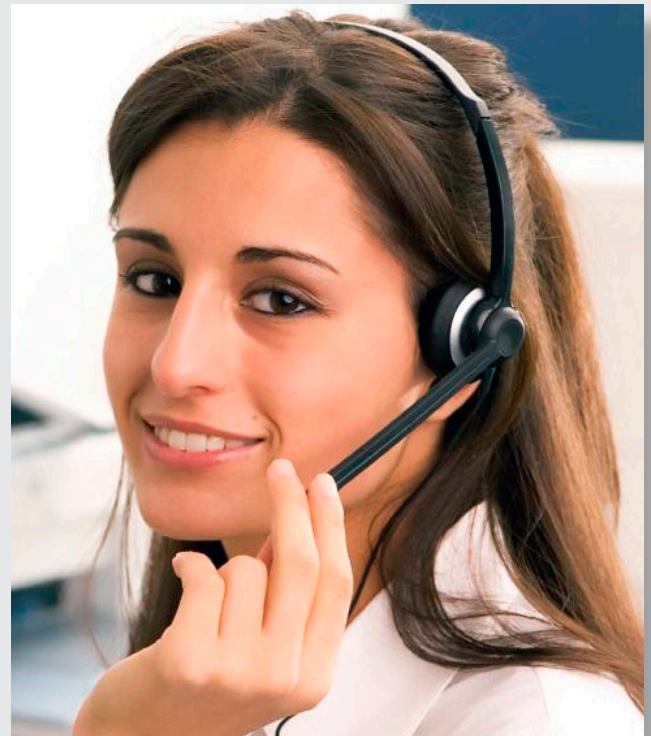
The bulk of the 911 surcharge revenue is obtained through the wireless surcharge. Under Iowa Code § 34A.7A (2), the collected surcharges must be



Subscriber Surcharges and Distribution

distributed in the following order (Attachment 5):

1. To the Department of Homeland Security and Emergency Management for program administration, an amount equal to that appropriated by the General Assembly. In 2019, this amount was \$250,000.
2. To joint 911 service boards, 60 percent of the total surcharge funds generated for communications equipment utilized in the implementation and maintenance of 911 services within the local PSAP. Iowa Code §34A.7A (2) sets out how the 60 percent amount is to be distributed among the 113 PSAPs in the state. For the 12 months ending Sept. 30, 2019, this amount was \$18,269,166, an increase of \$491,356 from the previous 12 months.
3. To wireless service providers, 10 percent of surcharge funds generated from July 1, 2013, through June 30, 2026, to recover their costs of providing 911 wireless phase one services. For the 12 months ending Sept. 30, 2019, this amount was \$805,682, a decrease of \$68,930 from the previous 12 months.
4. To Next Generation 911 network providers, 911 call processing equipment providers, 911 call transport providers, and third party 911 automatic location identification database providers for the costs of maintaining and upgrading the Next Generation 911 network functionality, 911 call processing equipment, 911 call transport from the NG911 network to local PSAPs including local GIS Grants. For the 12 months ending Sept. 30, 2019, this amount was \$4,634,979, a decrease of \$297,870.
5. For the purposes of development of public awareness and educational programs related to the use of 911, for the expenses of the 911 Communications Council for travel and training. For state FY 2019, the amount spent on these items was \$92,995 out of the allowable \$100,000.
6. For the virtual consolidation efforts approved through HF2254, HSEMD estimates \$6 million in build-out costs for the shared services project. To date, \$1,440,762 has been expended, \$1,184,138 of which was during the previous 12 months ending September 2019. The network migration project is estimated to cost \$5 million. To date, \$2,983,182 has been expended, \$2,239,681 of which was during the previous 12 months ending September 2019.



Conclusion

Advancements in technology allow for more accurate, efficient, and redundant systems that enable citizens to contact 911 to access life-saving resources. It's truly an exciting time for the entire emergency communications ecosystem. As technology evolves and advances, the people of Iowa expect its public safety lifeline to adapt and make parallel strides to stay technologically relevant. As more and more citizens maintain only a mobile phone, it is imperative the NG911 system be able to receive calls, transfer calls, visualize the caller's environment, and dispatch the right responders with the right equipment, all in a matter of seconds.

Along with Text-to-911 being implemented statewide, HSEMD continues to push for increased caller location information, the capability for photos and video to be received by the PSAP from callers contacting 911, and relayed to responders in the field. The coming deployment of FirstNet, which will provide a dedicated public safety high-speed wireless data network, will serve to transport this additional data to first responders. The deployment of FirstNet and the integration of the 911 system is already being discussed. Another integration that continues to be discussed is the dispatch compo-

nent of the 911 call. HSEMD is helping to fund access to the Iowa Statewide Interoperability Communications System, which will assist in the dispatch of 911 calls from regional back-up facilities. The cost-saving measures achieved through virtual consolidation will save local PSAPs money, allowing them to consider implementing the ever-evolving world of emerging technologies in the public safety communications field.

The Iowa Department of Homeland Security and Emergency Management will continue to work in a collaborative manner with the Iowa 911 Communications Council, the Iowa Utilities Board, the Iowa Telecommunications Association, the Iowa Statewide Interoperable Communications System Board, the Iowa Communications Network, and local 911 service boards to maintain and improve the level of 911 services within the state.

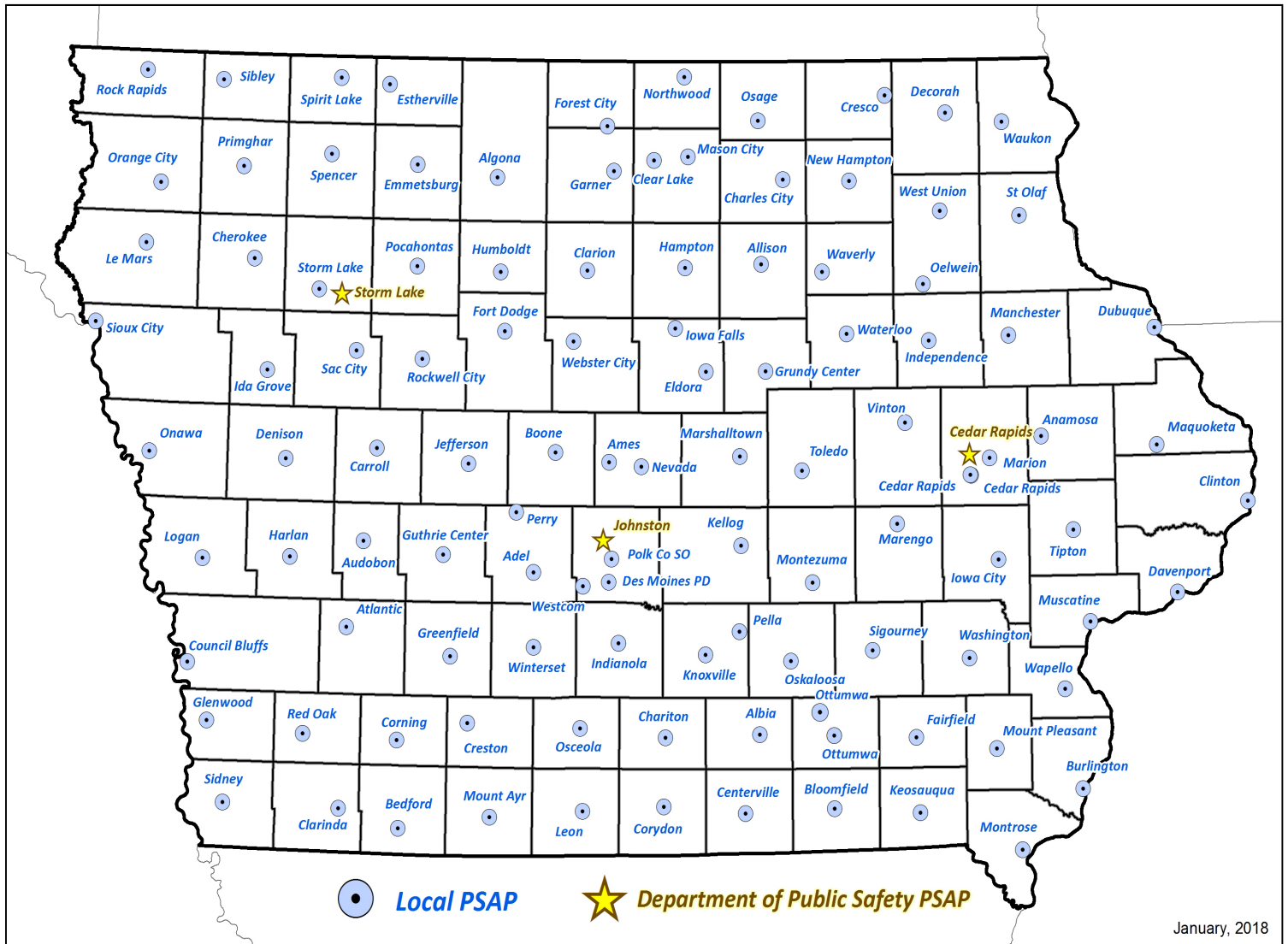
For more information about Iowa's 911 program, visit: www.homelandsecurity.iowa.gov.

*Inquiries may be directed to the 911 program administrator at **515.725.3231** or 911@iowa.gov.*



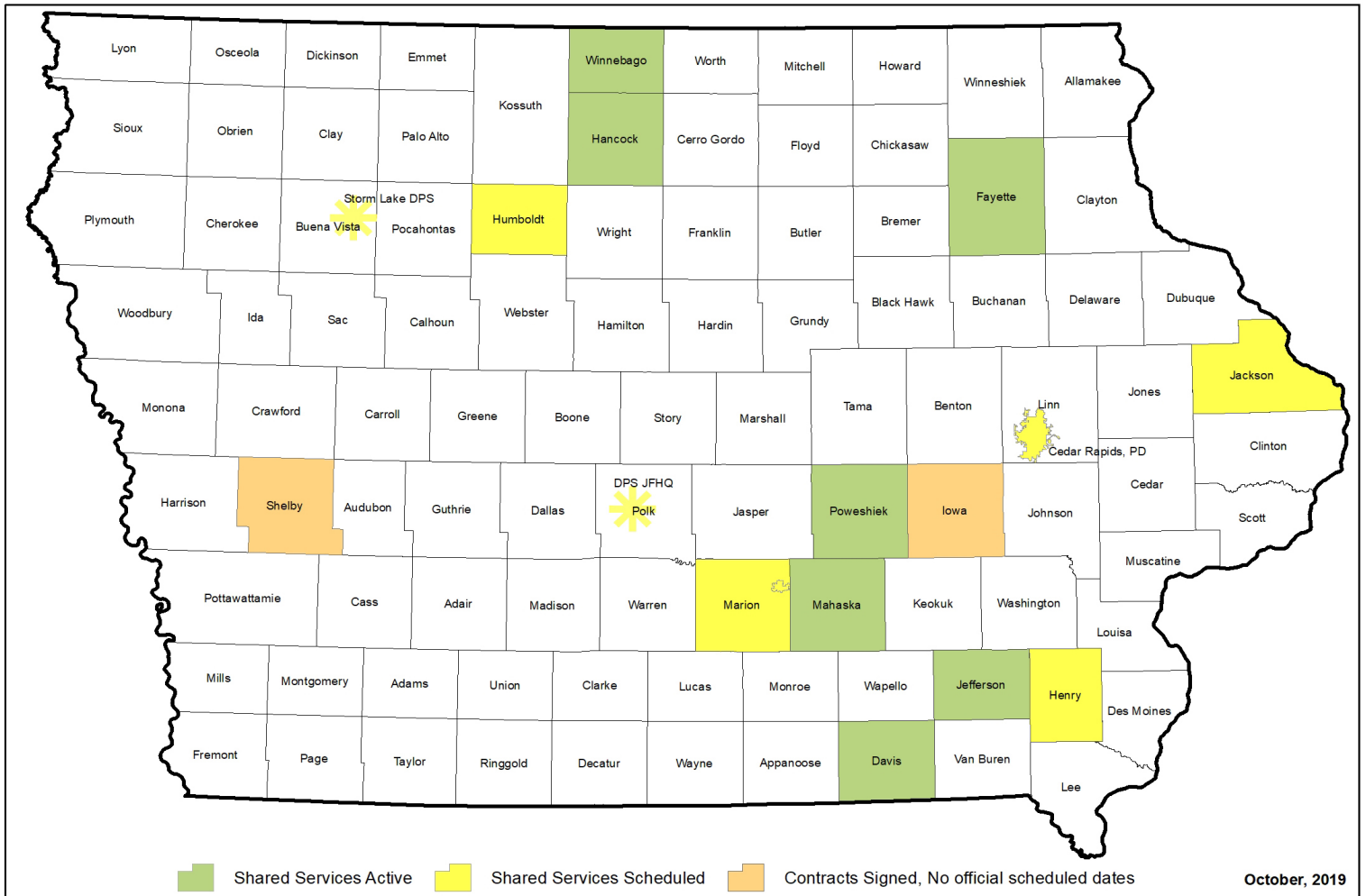
Attachment 1

Iowa's Public Safety Answering Points



Attachment 2

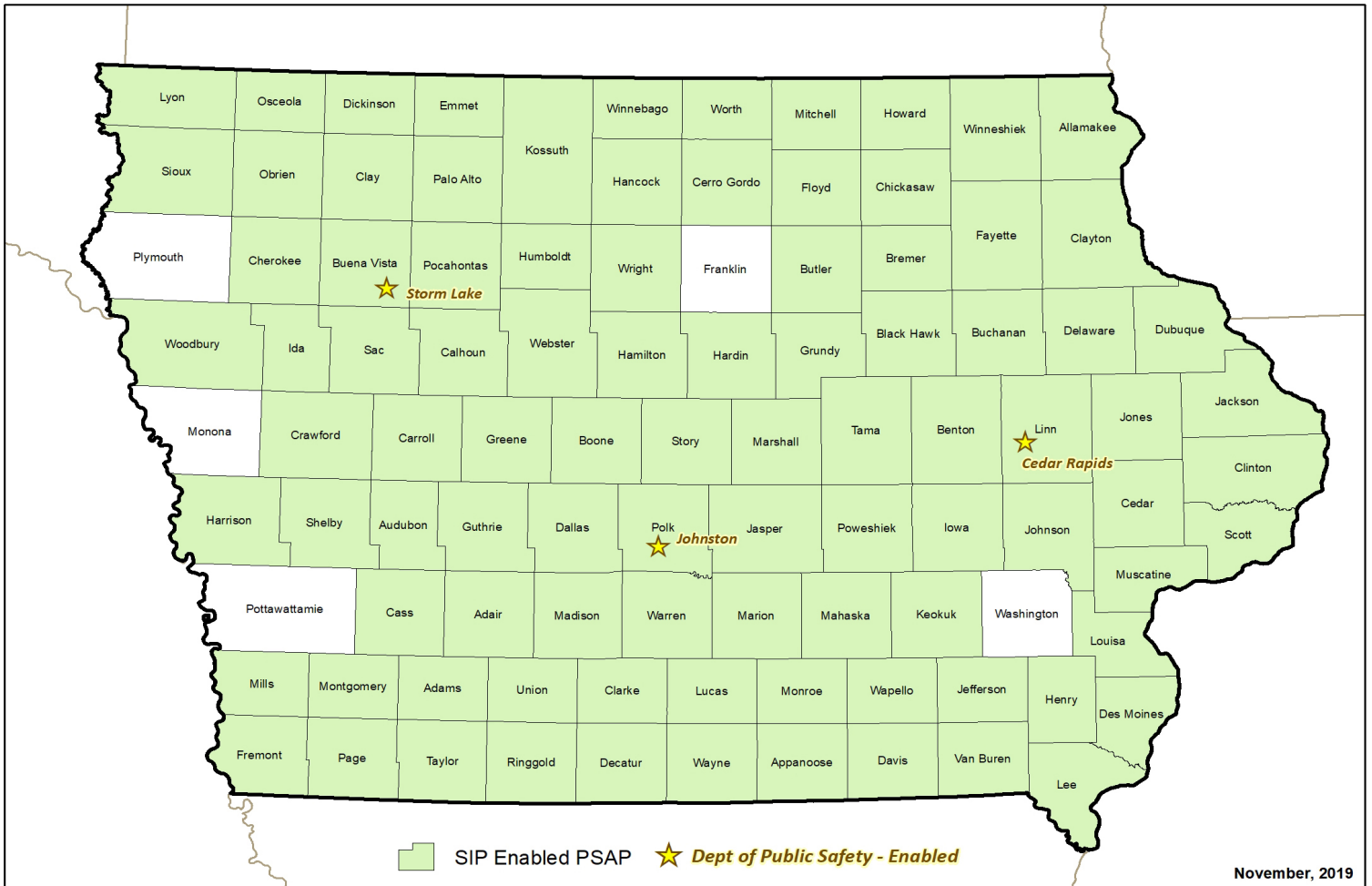
Shared Services Status



Attachment 3

SIP-Enabled PSAPs

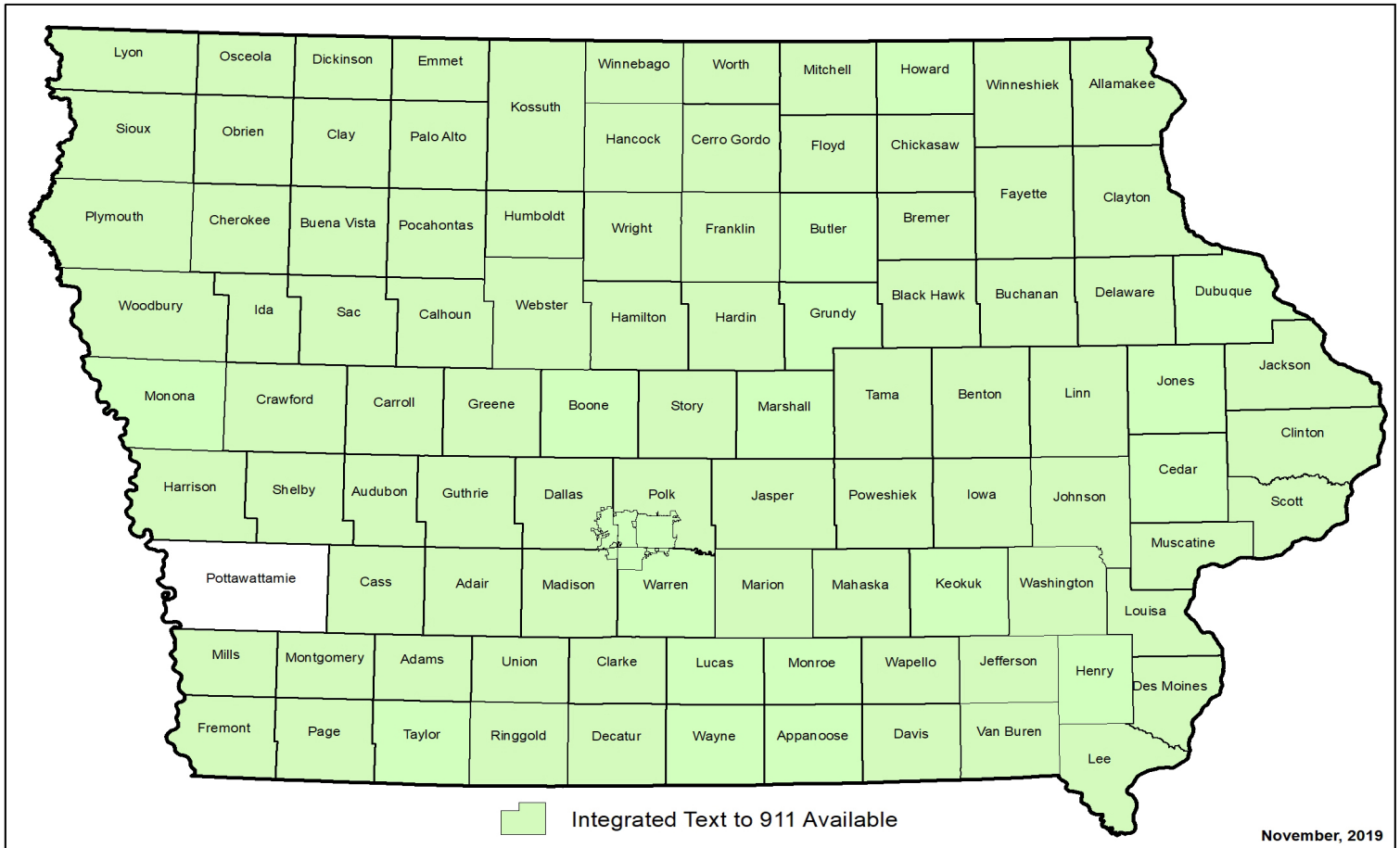
PSAPs receiving end-to-end IP-enabled wireless calls over the ESInet



November, 2019

Attachment 4

Text-to-911-Enabled PSAPs PSAPs capable of receiving text messages*



Attachment 5

Revenues and Expenditures Oct. 1, 2018, through Sept. 30, 2019

Revenues by FY Quarter					
	Q2 2019	Q3 2019	Q4 2019	Q1 2020	Totals
Surcharge Funds Received	\$ 7,377,533.70	\$ 7,760,999.55	\$ 7,507,734.22	\$ 7,802,342.68	\$ 30,448,610.15
Interest	\$ 72,274.89	\$ 70,108.41	\$ 79,273.45	\$ 92,536.61	\$ 314,193.36
Total Revenues	\$7,449,808.59	\$7,831,107.96	\$ 7,587,007.67	\$7,894,879.29	\$30,762,803.51
Expenditures					
HSEMD Administration	*	*	*	\$ 250,000.00	\$ 250,000.00
Wireless Service Providers-cost recovery for wireless Phase 1 services	\$ 196,635.99	\$ 199,695.86	\$ 204,714.96	\$ 204,635.59	\$ 805,682.40
Network Costs (includes NG contract, transport, aerial photography, GIS contract, GIS grants, text to 911)	\$ 1,099,202.48	\$ 1,261,694.16	\$ 1,133,826.75	\$ 1,140,255.63	\$ 4,634,979.02
PSAP Distribution (60% of surcharge revenue)	\$ 4,426,520.22	\$ 4,656,599.73	\$ 4,504,640.53	\$ 4,681,405.61	\$ 18,269,166.09
Subtotal Expenditures	\$ 5,722,358.69	\$ 6,117,989.75	\$ 5,843,182.24	\$ 6,276,296.83	\$ 23,959,827.51
Additional to Operating Surplus	\$ 1,727,449.90	\$ 1,713,118.21	\$ 1,743,825.43	\$ 1,618,582.46	\$ 6,802,976.00
Operating Surplus					
Existing Surplus Amount	\$ 13,083,469.77	\$ 14,066,087.96	\$ 15,275,156.39	\$ 12,301,221.72	
Surplus Revenues	\$ 1,727,449.90	\$ 1,713,118.21	\$ 1,743,825.43	\$ 1,618,582.46	\$ 6,802,976.00
Surplus Subtotal	\$ 14,810,919.67	\$ 15,779,206.17	\$ 17,018,981.82	\$ 13,919,804.18	
Surplus Expenses					
Council Travel, Public Education, PSAP Supervisor Training	\$ 37,921.43	\$ 841.13	\$ 31,130.29	\$ 944.07	\$ 70,836.92
Consolidation Grants and Surplus Paid Out	\$ -	\$ -	\$ 3,599,361.91	\$ -	\$ 3,599,361.91
Network Enhancements/PSAP moves	\$ -	\$ -	\$ 492,399.41	\$ -	\$ 492,399.41
Virtual Consolidation	\$ 706,910.28	\$ 503,208.65	\$ 594,868.49	\$ 1,792,833.79	\$ 3,597,821.21
Remaining in Surplus	\$ 14,066,087.96	\$ 15,275,156.39	\$ 12,301,221.72	\$ 12,126,026.32	
* Full annual allocation of \$250,000 was provided to HSEMD in Q1, 2020					

Glossary of Terms

ALI: Automatic Location Information

ANI: Automatic Number Information

CLC: Call Logic Center

CPE: Call Processing Equipment

DPS: Department of Public Safety

ESInet: Emergency Services IP Network

FY: Fiscal Year

GIS: Geographical Information System

HSEMD: Iowa Department of Homeland Security and Emergency Management

ICN: Iowa Communications Network

IP: Internet Protocol

LEC: Local Exchange Carrier

NENA: National Emergency Number Association

NG: Next Generation

PSAP: Public Safety Answering Point

SIP: Session Initiation Protocol

VoIP: Voice Over Internet Protocol