

October 3, 2016

To whom it may concern:

As Chairman of Wisconsin's Interoperability Council, I am excited to share with you the work product of our recently established Next Generation 9-1-1 (NG911) Workgroup. This diverse, multi-disciplinary workgroup has been working diligently on this white paper to emphasize the need for improved 911 capabilities throughout Wisconsin.

Surrounding states have already completed or begun the process of implementing NG911 while Wisconsin still lags behind the rest of the Nation in overall 911 services. The NG911 Workgroup has put together the following talking points to accentuate the need to review Wisconsin's 911 Public Safety Answer Point (PSAP) funding and to assist with the establishment of a strong interoperable network of PSAPs that will ensure 911 capabilities meet the expectations and needs of our citizens.

Please feel free to contact me with any questions you may have.

Respectfully,



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The Need for 911 Modernization in WI

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Definitions:

- Basic 9-1-1: 9-1-1 calls made from a particular telephone exchange ring at a single location.
- Enhanced 9-1-1: Automatic Number Identification (ANI) and Automatic Location Information (ALI) that also includes a street address and name are available to the person answering the call, and calls may be routed to different PSAPs by the calling telephone's service address.
- Wireless 9-1-1:
 - Phase 0: 9-1-1 calls made from a carrier's particular cell site/sector ring at a single location
 - Phase 1: Carrier name, calling number, cell site address and any sector directional available to person answering call
 - Phase 2: Latitude/longitude also available (but calls are still routed based on cell sectors only)
 - VoIP similar to Phase 1
- Next Generation 9-1-1 (NG911): The set of technologies and services that the 9-1-1 industry is moving toward in order to provide better service and keep pace with the use of various technologies and applications by the public and the telephone companies. NG911 will provide the public with text- and video-to-911 (only voice is now available) and will modernize the 1960's phone trunk infrastructure now being used to connect Telco central offices to the PSAPs. High speed and large bandwidth is required for these services, providing further impetus to replace the aging phone network infrastructure with an ESNnet.
- ESNnet (Emergency Services Internet Protocol network): A private network for public safety (9-1-1) calls (voice, graphics, video, telematics, etc.) which will take full advantage of non-copper 21st Century computer network attributes, cordoned off for only emergency services so as not to be as easily sabotaged or overwhelmed with civilian phone traffic that would constrain throughput in the time of high volume due to disaster or otherwise.
- PSAP: Public Safety Answering Point; the recipient/handling center for 9-1-1 calls. There are about 150 in Wisconsin; one for each county and some for municipalities.
- FirstNet: The First Responder Network Authority (FirstNet) was established by Congress in the Middle Class Tax Relief and Job Creation Act of 2012, after a large push for the need for interoperable communications by the public safety community. FirstNet plans to build a nationwide cellular network dedicated to first responders. This network will allow public safety users to send and receive mission critical data (such as video) when emergencies arise. Those large video files will sometimes be first received in the PSAPs from on-lookers and then relayed to the responders. Currently, file transfers are accomplished, if at all, via commercial means (such as "air-cards" provided by major vendors such as AT&T and Verizon), but are not immune from being choked by system congestion caused by too many civilians crowding onto the circuits.

Background:

- 9-1-1 (landline) service became available nationally in 1968. Basic systems were operated in some areas, serving about 25% of Wisconsin's population through 1988.
- Milwaukee and Iron County were the state's first and last counties to implement enhanced 9-1-1 (caller phone number and location); in 1989 and 2016 (**a 27-year span**).
- Wireless access to 9-1-1 began in the 1990s, with **the most progress made in Wisconsin during a three-year surcharge period in the mid 2000s**.
- **The 75 cent Police and Fire Protection Fee charged monthly on wireless phone subscribers was originally (2009) meant to be a 911 funding mechanism.** This fund represents about \$52M in the state general fund each year.
- The remaining phone surcharge that aids in 9-1-1 funding is the (up to) 40 cent surcharge on wireline phone bills that is a "bill and keep" fund that telcos use to pay for wireline phone trunks to WI PSAPs. In most counties, the **40 cent maximum is collected and does not completely cover the costs of those phone trunks**.
- Next generation 911 (NG911) efforts in the U.S. have been underway for about 10 years
- Many states have a viable system based on an internet-protocol (IP) network referred to as an ESInet (not the copper wire network that WI has and from which the telephone companies are retreating from and threatening to abandon or overcharge for starting in/about 2020). **WI is behind the times.**
- No WI PSAP has arranged access to an ESInet; due to current availability (simply doesn't exist) and cost (to implement a stand-alone network).
- A few Wisconsin PSAPs are receiving text messages today. While these messages currently comprise a very small percentage of 9-1-1 traffic and even a smaller percentage of emergency requests, this form of communication is much more realistic for persons with speech and/or hearing challenges than the legacy TDD/TTY systems. **A class action lawsuit, suggesting text-to-911 should be available there, is highlighting the issue in Arizona. Effective text-to-911 needs ESInet technology** to assure prompt and accurate delivery; current systems employed in WI depend on the public internet which has failed to deliver texts in a timely fashion due to its inherent limitations and lack of public-safety grade delivery service levels.
- **An ESInet (emergency services IP network) is the core of NG911** and is required to provide NG911 service delivery. Service delivery highlights include the ability to:
 - Deliver text-to-911 in a reliable way (some interim text-to-911 delivery mechanisms now exist, but rely on public internet that can introduce delays and service outages).
 - Deliver video-to-911
 - Provide for 911 call-load sharing among Public Safety Answering Points (PSAPs); helpful, for example, when a storm overloads one PSAP, a surrounding PSAP(s) can receive these overflow calls ensuring all calls placed reach a Public Safety dispatcher in a timely manner.
- **NG911 also will require 911 call handling equipment** for each PSAP, (or hosted solution incurring similar costs) to connect the public with the PSAP (via the ESInet).

- In addition to lacking statewide funding, **Wisconsin also does not provide statewide coordination of 9-1-1 efforts.** Both are likely factors in the state’s 27-year rollout of enhanced 9-1-1. And, states who are moving ahead with NG911 and ESInet implementation are finding **it is more affordable and interoperable than having each of the (e.g. County) PSAPs arrange for same on their own.**
- **“It’s all about data”:** Many citizens today use daily high-speed devices using high-speed networks – yet most 9-1-1 calls made in Wisconsin travel analog circuits at least once before reaching an emergency telecommunicator, and key data links such as the Automatic Location Information lookups operate in circuits running in the (VERY slow) 9,600 baud range. **The ESInet will provide for broadband speed transmissions** that will allow for the efficient and speedy delivery of the texts and pictures that NG911 promises and responders will use for safer and more effective field operations.
- A 2015 Statewide Communications Interoperability Plan (SCIP) called for a strategic plan for NG911 by April, 2016. A workgroup was created in the late summer of 2016.

Recommendations:

- Because of the high cost of an ESInet (AT&T estimates the service starting in 2017 will cost about \$0.18 per capita per month), **a statewide approach is suggested.**
 - At 18 cents per person, **a statewide ESInet, without volume discount, would be about \$12.5M/year.**
 - **NG911 call handling equipment for the state’s PSAPs is estimated to be very roughly \$25M** (a cost that would be repeated about every 5 years). Some PSAPs have acquired NG911 (ready) call handling equipment in the last 2 years and others are planning to replace their equipment soon due to the outdated and unsupported equipment now in their PSAPs, however this “ready” equipment still needs the ESInet in order to provide NG911 services. Further, some PSAPs could be virtually combined together with call handling equipment that could be hosted by a few large PSAPs, by the State, or by vendors (in a SaaS fashion).
- The State should consider (like many other states):
 - **A regional or statewide approach to apprehend the benefits of volume pricing;** (whether that be through shared CPE or Network).
 - The use of BadgerNet (BCN) as a possible adjunct to any vendor-provided network services. Use of BCN might save the taxpayer in ESInet costs.
 - A \$0.95/phone/month Minnesota fee funds a state office and ESInet to each of their 104 PSAPs
 - The **convergence of NG911 and FirstNet network efforts to further reduce network costs** for these crucial public safety network needs. This may be possible if the Federally-funded FirstNet funding model allows.
 - **A statewide organization to oversee the introduction of NG911** and to manage contracts and fee collection and/or distribution for the ESInet. GIS is also an important aspect to “have right” for NG911 in order to ensure proper routing of 9-1-1 calls to the

applicable PSAP...statewide GIS coordination is therefore also of prime concern. This organization could be housed in state government (like most states) or could be an alternative. In any case, the statewide group should be augmented by an advisory organization that includes 911 professionals from the State's PSAPs.

NOTE: the State's Interoperability Council has a 911 committee that has organized a NG911 work group to help plan a NG911/ESInet implementation...they will:

- determine statewide needs;
- study other implementations around the country for best practices;
- work with the state (e.g. the CIO) to determine the extent of the feasibility and cost of the use of BadgerNet and/or the state data centers for call-handling hosting; and
- further refine the cost estimates listed above.

Despite the lack of precise cost estimates and implementation plans, the State of WI should provide a funding mechanism (seed money) for this inevitable cost. Leaving it to the individual 140+ county/municipal PSAPs will ensure the benefits of NG911 will be severely delayed for years and will add substantial cost to be borne by the taxpayers.

This White Paper was drafted by the Interoperability Council's NG911 Workgroup. Membership on the Workgroup includes:

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