

RHODE ISLAND EMERGENCY SERVICES DISPATCH ANALYSIS

**PREPARED FOR:
THE JOINT MUNICIPAL SHARED SERVICES STUDY
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Executive Summary

Rhode Island's Joint Municipal Shared Services Study Commission requested that the Taubman Center for Public Policy at Brown University conduct an independent analysis of the State's E-911 and dispatch emergency services systems. The Taubman Center's Applied Social, Economic, and Regulatory Analysis (ASERA) division undertook a comprehensive examination of the current 911 call center-to-dispatch system and the impacts of potential technological and systemic adjustments.

Our findings suggest that the State is at an important crossroads in emergency services provision that stems from a significant change in 911 technology. Rhode Island currently employs a statewide 911 system known as Enhanced 911 or E-911. Incoming calls are routed to telecommunicators at the primary public safety answering point (PSAP) in North Scituate then relayed to 72 dispatch centers located throughout the State. The dispatchers then send the appropriate first responders to the emergency. Although the system works well for voice communications, the PSAP is currently upgrading to a Next Generation 911 system (NG-911) that will allow callers to send text messages and eventually digital media via the 911 gateway.

This significant technological step will have the greatest positive impact on public safety if text and digital information can be transferred from the PSAP to municipal dispatchers and then on to first responders in the field. The technological upgrades necessary to realize NG-911's potential will create significant costs for each of the State's 72 dispatch centers if they choose to adopt the technology separately. Changing the structure of the emergency services dispatch system would allow municipalities to contain and share these costs, increase the efficiency of the technology, and improve the speed of adoption.

The impending change of the State's base 911 technology requires proactive planning to ensure that the twin goals of the system – preserving public safety and containing costs – are met now and for years to come. The current system could be restructured in two different ways. The first option is to consolidate municipal dispatch centers into regional dispatch centers while leaving the primary PSAP in North Scituate unchanged. This form of horizontal consolidation would create a smaller number of dispatch centers requiring current and future upgrades. The second option is to combine telecommunicator and dispatch roles into consolidated regional centers. Consolidating vertically in this manner would remove a step in the current 911 system by eliminating the telecommunicator-to-dispatcher link in the information transmission chain. This would reduce the complexity of future system upgrades and potentially improve response times.

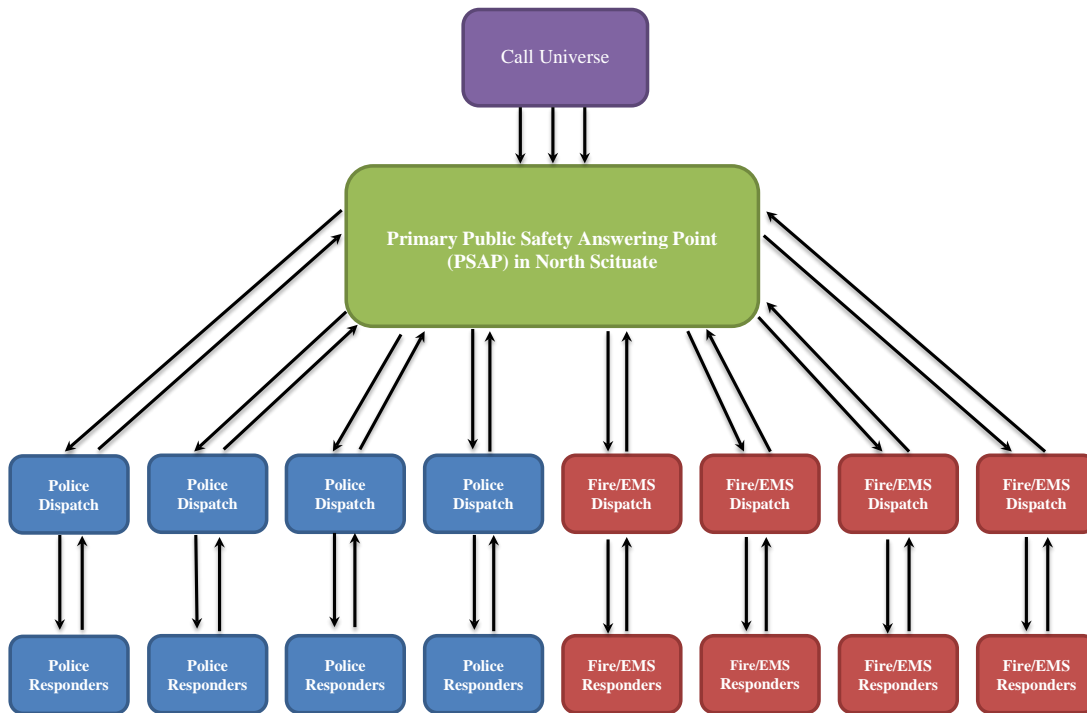
For reasons explained throughout this document, we recommend that the State implement a form of horizontal consolidation. While we predict that emergency services dispatch could be more efficient under vertical consolidation, the transition to this model is prohibitively complex in the short-term. There is still substantial uncertainty surrounding how the evolving technology will ultimately affect 911 systems nationwide. Until the technology matures, moving to a vertical model carries unnecessary risks in terms of sunk costs and call failures. Our analyses suggest that

a horizontal consolidation model is more feasible at this time, and promises to reduce financial burdens on municipalities as well as improve public safety. Where appropriate, horizontal systems can later be adapted into vertical structures without penalty.

Existing E-911 Architecture¹

To address the challenges NG-911 implementation will pose for Rhode Island, it is necessary to first understand the existing E-911 architecture. The current system has four basic links in the transmission chain between the call initiator and the first responder (see Figure 1). The chain begins with a 911 call being placed from the call universe in Rhode Island. The call is then received by the primary public safety answering point (PSAP) in North Scituate. Telecommunicators at the PSAP ascertain the type of emergency (police, fire, and/or medical) and connect the caller to the pertinent local dispatch center(s). The final link in the chain is the communication between the local dispatch center and the first responders.

Figure 1: Current E-911 System



¹ The bulk of the information presented here regarding E-911 was generated through a series of interviews with the North Scituate primary PSAP (verified by email March 3, 2014) and a sample of police and fire dispatch centers throughout the State.

Call Initiation

The Rhode Island 911 system receives a minimum of 1,200 to 1,500 calls each day. Roughly 75% of those calls are from wireless callers, whose approximate location is available if the call is made from a cellular phone manufactured after 2004. Approximately 25% of calls are from landlines, which transmit location and owner information. Calls average between 60 and 90 seconds. Fewer than 4% of calls are placed on hold (the national average is between 8-10%). Until NG-911 is implemented, the current system cannot receive texts, images, or videos.

In each of the previous five years (2009-2013), the E-911 system has received more than 500,000 calls. Call volume is highly correlated with precipitating events such as winter storms, hurricanes, public events, and holidays. Additionally, fluctuations in Rhode Island's seasonal population cause higher call volumes during summer months. To respond to non-English speaking callers, Rhode Island contracts with Language Line (a translation service).

Operation of the PSAP

The Rhode Island Enhanced 911 Center (E-911) is located in North Scituate, RI, and is the State's sole PSAP (although a fully functional backup location exists). The E-911 Center provides 24-hour statewide emergency public safety communication services through the universal emergency number, 911. On average, six telecommunicators are on duty at any given time and receive all 911 calls generated within Rhode Island. They then determine the nature and approximate location of the emergency, and connect the caller with the appropriate local dispatch center(s). Telecommunicators generally stay on the line to convey relevant situational information in a three-way conversation between themselves, the dispatch operator, and the call initiator. Where possible, the telecommunicator also transmits electronic information to the dispatch center. Once the telecommunicator has relayed all necessary information either verbally or electronically, the local dispatcher is responsible for dispatching appropriate emergency responders to the 911 caller's location. This separation between the duties of telecommunicators and dispatchers is unusual nationwide, yet it has functioned well for Rhode Island.

Current Role of Local Dispatch Centers

The current structure of emergency services dispatch in Rhode Island is a decentralized model in which almost every town or municipality is solely responsible for its own police, fire, and EMS dispatch centers. Therefore, the technology, staffing, and dispatch methodology varies widely across the state. Local dispatchers are responsible for receiving calls from the PSAP and dispatching the appropriate first responders to the emergency.

The majority of local dispatch centers rely solely on verbal communication with the PSAP telecommunicator and the caller to receive the caller's number and GPS coordinates. Only three local dispatch centers have the CAD technology necessary to receive this information electronically. This lack of system interoperability raises serious concerns regarding how local dispatch centers will receive text information when NG-911 comes on line.

First Responders

The roles and responsibilities of first responders vary by town and type of department (police/fire/EMS). Fire/EMS first responders often cross municipal boundaries in pursuance to municipal aid agreements, while police spend more time within their municipal boundaries and generate more calls to their own dispatch centers. The technology that first responders possess also varies greatly, including different radio platforms/frequencies, onboard computers, and GPS technologies. The absence of statewide regulation or coordination means that municipalities frequently make choices about technology based on local needs rather than statewide goals.

Current Plan for NG-911 Implementation

NG-911 is an Internet Protocol (IP) based system designed to allow individuals to use communication methods other than traditional landline and wireless phones to access emergency services.² These communication methods include texts, pictures, and videos. Many states are in the process of implementing NG-911, although progress has been slow. Rhode Island Department of Public Safety (DPS) has developed a plan for NG-911 implementation that will allow one form of media communication -- text messages -- to be sent to the PSAP in North Scituate³. PSAP personnel estimate that the NG-911 text-capable system will come on line in December 2014/early 2015⁴. The current implementation blueprint does plan for any state-funded local dispatch centers to receive the technology that would enable them to receive the information electronically from the PSAP. Similarly, first responders are not currently slated to receive the technology necessary to handle multi-media (including text) transmissions.

Challenges Resulting from Rhode Island's NG-911 Blueprint

The current blueprint does not include provisions for moving NG-911 technology to the dispatch centers and first responders. Limiting NG-911 to the PSAP (at least in the short-term) creates a number of problems for the Rhode Island 911 system. The most pressing of these are highlighted below.

Interpretation of Text Messages

Telecommunicators at the primary PSAP will be solely responsible for interpreting the text messages sent to 911. Simply decoding texts may prove challenging, due in part to the evolving texting vernacular that relies heavily on shorthand terms. This has the potential to increase response times throughout the system, particularly because telecommunicators must then relay

² "Legal and Regulatory Framework for Next Generation 911 Services Report to Congress." Federal Communications Commission. 22 February 2013. Web. 1 March 2014.
<http://www.fcc.gov/document/legal-and-regulatory-framework-ng911-services-report-congress>.

text messages verbally to local dispatchers. Ambiguous and incorrect terms/information may also systematically slow down emergency responses to text messages relative to traditional voice contacts.

Delays will also arise in those instances when dispatchers and/or first responders need clarification from the initial caller and must reverse the information flow and query the initial caller. When that is necessary, dispatchers and first responders will have to:

1. Contact the PSAP with their question(s),
2. Wait for the telecommunicators to send additional texts to the call initiator,
3. Wait for responses from caller to the telecommunicator, and then
4. Wait for the telecommunicator to relay the information back to the dispatcher.

Locating the Text Initiator

Currently, GPS systems imbedded in post-2005 cell phones allow the PSAP telecommunicators to accurately locate most voice callers, and dispatchers also have the ability to ask location information of callers directly during the 911 call. With texting, however, the way that data is transmitted in a single burst can dramatically increase uncertainty regarding the location of the emergency. Some texts are not transmitted immediately, and even when they are the caller may not be stationary. For example, consider the scenario where a passenger in a moving car texts that a passenger in another vehicle is brandishing a firearm. At typical highway speeds, a slow texter may be miles beyond the vehicle in question when the text is actually sent (and the GPS coordinates are recorded). This problem is exacerbated by the dispatcher's inability to access the text exchange directly for clarification and location information.

Benefits of Implementing NG-911 Technology at Local Dispatch Centers

Many of the challenges associated with the current plan for NG-911 implementation can be alleviated if NG-911 technology is installed at local dispatch centers. Local dispatchers can use this technology (a static IP broadband connection that has adequate bandwidth, a router, and a CAD system capable of interfacing with the CAD system at the primary PSAP) to receive texts and send this information to first responders. Allowing dispatchers direct access to the texts and the ability to participate in text exchanges will increase the accuracy of the interpretation, decrease delays, and allow for timely clarifications for first responders. These advantages, explained below, will vastly improve public safety outcomes statewide.

Reduces NG-911 Strain on Telecommunicators

PSAP telecommunicators will be able to send text messages directly to local dispatchers, who can assist with the interpretation of text messages from 911 users. In addition, any further contact telecommunicators have with 911 users can be electronically transmitted to local dispatchers instead of requiring additional verbal communications. For example, if a telecommunicator receives a secondary text from a 911 user with more details about the emergency, the information can be sent to the local dispatch center with the push of a button rather than an

additional call between the PSAP and the dispatcher. NG-911 technology at the local dispatch level allows local dispatchers to assist and take over some of the tasks that were originally placed solely on the telecommunicators at the primary PSAP, reducing the amount of time telecommunicators need to spend on one contact.

Reduces Communication Errors and Delays Between the PSAP and Local Dispatchers

With NG-911 technology available to dispatchers, telecommunicators do not have to verbally relay text messages to local dispatchers. Telecommunicators and dispatchers will both be able to receive texts electronically, reducing the chance of miscommunication between the primary PSAP and local dispatchers. The instant transmission of text content also reduces response times – a critical step in improving public safety.

Expediting Clarification Requests from Dispatchers to Initial Caller/Texter

Local dispatchers will be able to request additional information from the initial texter without having to go through four additional steps per request (see information stream bulleted on the previous page). This will improve the quality of the information as well as decrease the delays in information transmission. Reducing delays is particularly important in locating the emergency and/or text originator. Dispatchers will be able to exchange information with the text originator in real time, thereby providing more precise location data.

Challenges of Introducing NG-911 Technology at Local Dispatch Centers

The analysis above suggests that public safety would significantly benefit from the installation of NG-911 technology at the dispatch level throughout the State. The challenges of doing so, however, are also significant.

Lack of Technology Regulation or Coordination

As local dispatch centers begin to install NG-911 compliant technology they are left without statewide or federal coordination regarding exactly what technology they should use or how local dispatchers should be trained to handle their new roles. Therefore, each local dispatch center may adopt different technologies and dispatch protocols, hindering interoperability and decreasing the likelihood of cohesive communication among dispatch centers. In addition, lack of regulation regarding the implementation of NG-911 may lead some local dispatch centers not to adopt NG-911 technology due to cost, personnel, or other constraints. Regarding models for regulation and coordination, both Vermont and Iowa have statewide agencies overseeing uniform implementation of their NG-911 systems.

Municipal Costs of Implementation and Upgrades

Each local dispatch center will need to install the technology mentioned above in order to receive text messages from the PSAP. Additional upgrades may also become necessary as NG-911

expands to include pictures, videos, and other media messages.³ Technology costs, training costs, and upgrade costs will be necessary for each local dispatch center to utilize NG-911. These costs are particularly hard on municipalities under the current structure of Rhode Island’s emergency response system. Each municipality will individually face the costs of installing the technology for police, fire, and EMS dispatch.

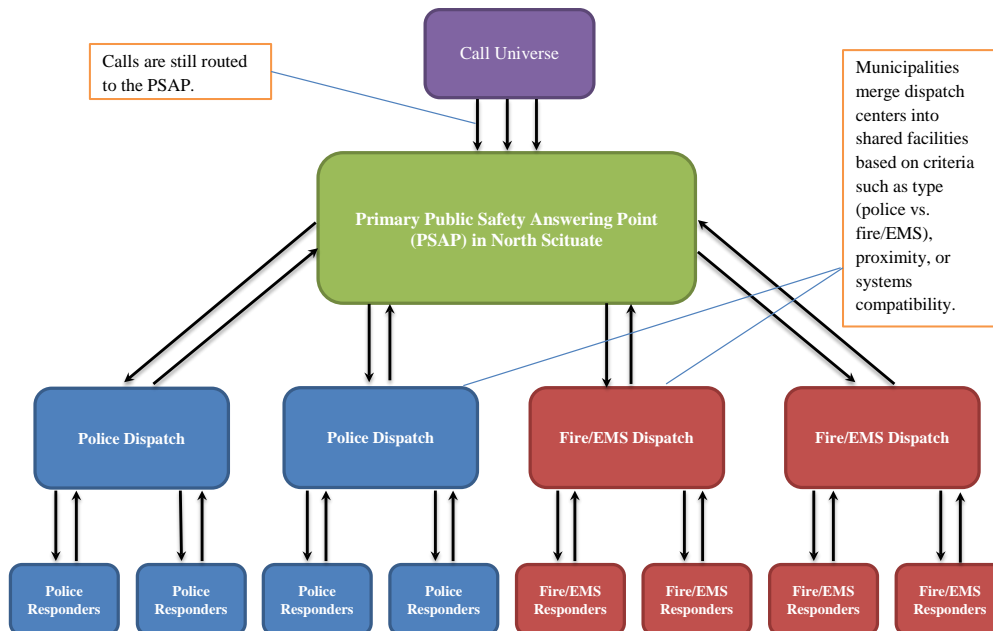
Options for Structural Change

The public safety advantages of implementing NG-911 technology at the municipal dispatch and first-responder levels are clear. The challenges – with cost chief among them – are equally clear. Experiences from other states suggest that consolidation models might reduce the burden on municipalities while still achieving considerable gains in public safety. Two alternatives to the current decentralized model are discussed and evaluated below based on their potential to improve public safety and reduce costs to localities and the State.

Horizontal Consolidation

To decrease costs of installing NG-911 technology at the local dispatch level, dispatch centers could be combined to reduce the total number of dispatch centers in the State (see Figure 2). Decisions regarding how the consolidation is best achieved can be made using criteria such as regional proximity, call volume, cooperative agreements, or financial considerations.

Figure 2: Horizontal Consolidation (with NG-911 implemented down to local level)



³ William P. Gasbarro, personal communication, May 23, 2014.

Under horizontal consolidation, there is no change in how emergency services are dispatched after a person contacts 911 through call, text, or (eventually) multimedia message. As shown in Figure 2, communications will still be sent to a PSAP telecommunicator who then transfers the communication to the appropriate consolidated dispatch center. Dispatchers may now be responsible for police, fire, or EMS dispatch over a larger region, but the manner in which they dispatch services will remain the same. This means that local dispatchers in a horizontal consolidation model will need no additional training beyond the necessity of becoming familiar with a larger geographic region.

Fiscal Implications

Cost Savings

Horizontal consolidation results in fewer dispatch centers, thus reducing local-level costs by sharing NG-911 expenses across multiple municipalities. These costs include the upfront capital costs of installing a static IP broadband connection, router, and CAD technology. Future costs include monthly connectivity costs of NG-911 and the costs of maintaining and upgrading the system as new technology develops. Troubleshooting and implementation issues can be addressed at fewer locations, resulting in reduced maintenance and operations costs.

Additional Outlays

Additional upfront costs of horizontal consolidation include expanded facilities to house local dispatch centers.

Public Safety Implications

Effectiveness of the 911 System

Horizontal consolidation will retain the existing communication structure, and is therefore projected to maintain the effectiveness of the Rhode Island 911 system. 911 contacts are first sent to a telecommunicator at the primary PSAP and then transferred to the appropriate local dispatch center. Dispatchers maintain similar roles, albeit with two changes. First, dispatchers are responsible for larger areas of control, and must gain additional local knowledge. Second, dispatchers can view texts and other multimedia messages, increasing the accuracy of information transmission chain between the 911 user and the first responder. PSAP telecommunicators will not have a significant increase in responsibilities, as they will be able to receive calls, texts, or multimedia messages and then transfer them to local dispatch centers that can assist in text interpretation.

Interoperability Benefits

Local dispatch centers will see an increase in interoperability if they transition to NG-911 using shared technology. Interoperability is easier to achieve when coordinating among fewer local dispatch centers, regardless of regulatory oversight.

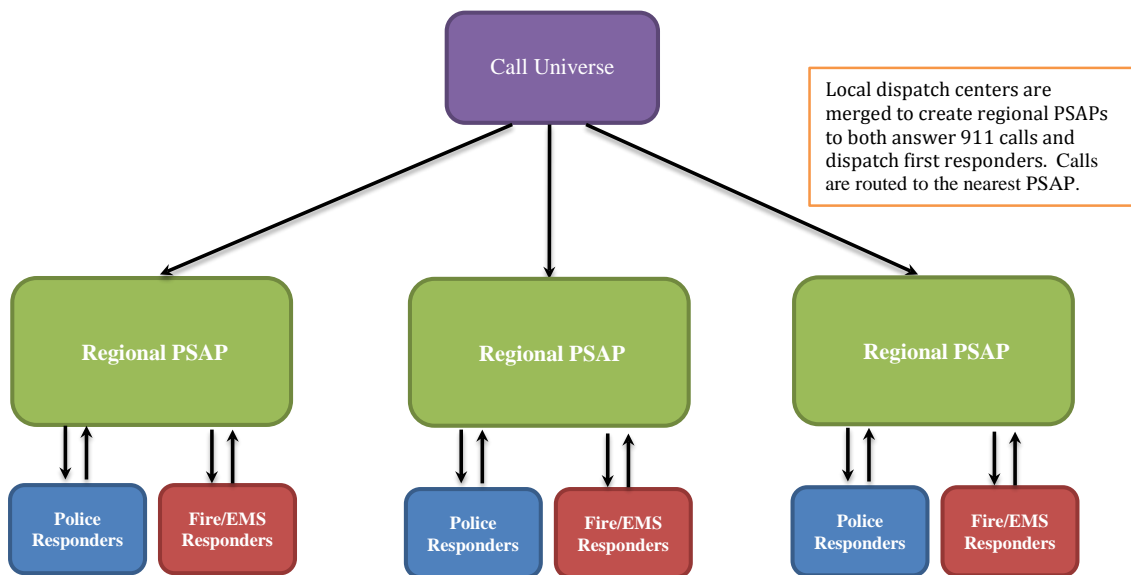
Summary

Horizontal consolidation decreases costs of the transition to NG-911 for local dispatch centers in comparison to the current decentralized model without compromising public safety. It also streamlines the system, reducing the transaction costs of future upgrades and systemic changes after the initial consolidation costs are incurred.

Vertical Consolidation

Consistent with other state models, Rhode Island’s public safety landscape could be improved if a point of contact is removed from the four-point transmission chain (see Figure 3). Vertical consolidation is a potential continuation of horizontal consolidation that removes a point of contact by altering the role of PSAPs. Vertical consolidation combines the roles of a PSAP and a dispatch center into a single unified facility. Where horizontal consolidation regionalizes local dispatch centers, vertical consolidation would turn these regional dispatch centers into fully functioning PSAPs that also dispatch first responders directly. Telecommunicators would answer 911 calls and dispatch emergency services without transferring calls through an intermediary dispatch unit. Vertical consolidation would allow the multimedia formats introduced by NG-911 to be more quickly and efficiently relayed through the shortened the transmission chain.

Figure 3: Vertical Consolidation (with NG-911 implemented to local level)



Fiscal Implications

Cost Savings

Vertical consolidation would further reduce the number of 911 related facilities in Rhode Island. Reducing the number of facilities that require upgrading will reduce these costs and streamline the process. The combination of dispatch and PSAP responsibilities into single facilities will remove a link in the 911 transmission chain, generating two key cost advantages. First, by removing another gatekeeper in the chain, the State/municipalities reduce long-term personnel costs. Second, every link requires technology on both sides of the transmission (initiator and receiver) to function properly. Removing a link simplifies the chain, reducing transactions costs per transmission and eliminating the need to upgrade a part of the prior system.

Additional Outlays

The expenditures for vertical consolidation relate to capital and infrastructure costs associated with building new PSAPs (or upgrading current facilities to serve this role). When municipalities engage in vertical consolidation they will not face the costs alone. As in the horizontal consolidation model, each PSAP outlay would be shared among multiple municipalities.

Public Safety Implications

Effectiveness of the 911 System

Vertical consolidation will improve public safety by removing a point of contact in the four-point transmission chain. Removing a step in this process decreases the chance of information being delayed or miscommunicated. Information would be transferred faster from caller to emergency responder when PSAP and dispatch center roles are combined. This increased efficiency can be seen in Vermont's 911 system, which includes eight PSAPs that directly dispatch emergency services to different regions of the State.

Recommendation

As the State makes the transition from E-911 to NG-911, we recommend employing a horizontal consolidation model that combines multiple local dispatch centers into regional dispatch centers. While we predict that vertical consolidation could be more efficient, moving directly there from the existing E-911 architecture would involve significant uncertainty, greater complexity, and a larger resource commitment. Horizontal consolidation maintains Rhode Island's excellent level of public safety while reducing the significant financial burdens on municipalities of implementing NG-911. Should Rhode Island choose to vertically consolidate in the future, the structural changes made during horizontal consolidation will aid in the process.

We also recommend that the State take two additional steps during this critical initial phase of Rhode Island's implementation of NG-911. First, the State should regulate the adoption of NG-911 technology and protocols at the dispatch level. Ensuring the interoperability of the State's

emergency services dispatch system across municipalities will improve public safety and decrease long-term costs. Second, the State should explore the possibility of offering up-front cost sharing programs to mitigate the up-front capital costs of NG-911 implementation when consolidating dispatch systems. Offering financial assistance during consolidation will provide the municipalities with a positive incentive to consolidate as well as speed the statewide transition to the new technology.

Pilot Program

If the State chooses to pursue horizontal integration as it implements NG-911, we strongly recommend that the State engage in at least three pilot projects to beta test the effects of consolidated dispatch on the rest of the information transmission chain. The limited initial rollout of NG-911 at the primary PSAP in December 2014/early 2015 provides a window to proactively identify locations and personnel at the municipal level who are best suited to take part in the initial pilots.

The pilot project sites should be selected based upon the following criteria:

1. The anticipated call volume of the participating municipalities;
2. Strong existing ties among the participating communities at each pilot site;
3. Geographic proximity of the participating municipalities, with at least two rural/suburban pilots and one pilot with a predominantly urban participant; and
4. At least one of the selected sites should experience a large seasonal influx of tourists to test the translation systems (such as Language Line) and explore how tourism and holiday activities interact with NG-911 implementation.

The State and municipalities should design the pilot projects to specifically evaluate the public safety and fiscal effects of horizontal consolidation in anticipation of statewide NG-911 implementation. Some of the key aspects to consider when evaluating the pilots include:

- Ensuring the interoperability of technological systems in each link of the information transmission chain: 1) between callers and the PSAP, 2) the PSAP and dispatchers, and 3) dispatchers and first responders;
- Identifying both the upfront capital costs/training requirements of NG-911 implementation at the dispatch level and the long-term fiscal impacts of horizontal consolidation; and

- Creating standardized, repeatable dispatch consolidation protocols for statewide implementation. An independent external organization such as APCO should evaluate the protocols to ensure their soundness.

Finally, the program evaluation of the pilot projects needs to explicitly address where horizontal consolidation of dispatch services is most and least likely to work in Rhode Island. It is unreasonable to expect that all municipal areas in the State are equally amenable to the horizontal consolidation approach.

Caveats to the Analysis

The long-term nature of NG-911 leads to inevitable uncertainty regarding certain implementation elements. First, additional technology will be necessary to allow local dispatchers to send information about calls or texts electronically to first responders in their vehicles or through handheld communication devices. The costs and technical specifications of this are not known at this time.

Second, NG-911 technology in Rhode Island and other states is primarily focused on the transmission of text messages. However, future technology will likely be focused on other media like images and video messages.

Finally, dispatchers in vertically consolidated facilities will function with a lower level of local knowledge than dispatchers under a decentralized system. Switching from local municipal dispatchers to regional dispatchers would most likely entail a new component of training geared towards familiarizing dispatchers with their area of responsibility. The specifics of this training and its effect on the system are unknown at this time.

Appendix

NG-911 Technology at the Primary PSAP in North Scituate

The current NG-911 implementation plan outlined by the Rhode Island Department of Public Safety will allow text messages to be sent to the primary PSAP in North Scituate². Text messages will be transmitted through a Voice Over Internet Protocol (VoIP) network with the installation of a Solacom selective router as well as new Guardian workstations at both the primary PSAP in North Scituate and the alternate PSAP located at 1951 Smith Street, North Providence, RI³. The selective router has already been purchased by RI E-911 for \$155,000.00, a router update and 14 Guardian workstations for the primary PSAP have been budgeted in the RI E-911 FY2014 budget for \$277,000.00, and 14 additional workstations for the alternate PSAP have been budgeted in the RI-E 911 FY2015 budget for \$200,000.00³. When this technology is on site and implementation begins, the primary PSAP in North Scituate will be able to receive text messages from 911 users. However, because local dispatch centers will not have NG-911 technology, these text messages will need to be verbally relayed from telecommunicators at the primary PSAP to local police, fire, and EMS dispatchers.

Iowa Interview Regarding NG-911

Contact: Barbara Vos

E-911 Program Manager

Iowa Homeland Security and Emergency Management Department

Background and Transition

The Homeland Security and Emergency Management Department (HSEMD) 911 Office has responsibility for the administration of the Enhanced 911 (E-911) Program in the state of Iowa. Additionally, the Office has been the lead agency in charge of the transition to Next Generation 911 (NG-911). Iowa has 115 primary Public Safety Answering Points (PSAPs) across 99 counties. The number of PSAPs has remained consistent throughout the transition to NG-911. Iowa has two systems for E-911: a system for landline calls and a system for wireless calls.

The process of transitioning to NG-911 began in August 2011. Iowa worked with the National Emergency Number Association (NENA) and the National 911 Office, an office of the US Department of Transportation (USDOT), to determine the proper interim I-3 standards and begin building a new Emergency Services IP Network (ESInet).

The ESInet and corresponding hardware and software purchases were made possible through grant money issued in 2009 from the USDOT. The grant stipulated that the approximately \$2 million in funds be spent by November 2012, which required an aggressive implementation schedule. Iowa began deploying PSAPs on an eight-month time frame at the beginning of 2012. All 115 PSAPs were migrated from existing networks to the new ESInet during this time. The schedule required one cut over per day, five days a week. The process required coordination between network providers, E-vendors, and PSAPs.

Iowa also benefitted during this transition from the Iowa Communications Network (ICN), an independent executive branch agency within the state government that operates a state-owned fiber optic network. The ICN received a grant from the federal government that allowed the agency to offer connectivity to PSAPs at a reduced rate. As a result of these grant stipulations, connectivity rates for PSAPs dropped from \$2000 per month to as little as \$350 per month in some cases.

L.R. Kimball has been Iowa's primary consultant throughout the transition to NG-911. Iowa also contracts with TeleCommunication Systems, Inc. for data related matters, and Geo-Comm for public safety GIS mapping. Iowa's contract with Geo-Comm was leveraged through an existing federal contract. The GIS mapping process is currently in development and is expected to last three years.

Iowa's E-911 network operates through two data centers that route 911 calls to the relevant PSAP. All carriers have circuits into the data centers, and carriers are responsible for those costs. No changes have been made to the training process for telecommunicators as no new medias are yet online in the state. However, nine PSAPs are currently equipped with the capability to receive text messages. Iowa expects text message receipt at these nine PSAPs to be online by the end of 2014. Iowa does not expect to receive large volumes of text messages at the outset of this phase. Public awareness campaigns about the newly available technology are being considered.

No new medias will be passed on to vehicles or assets in the field once NG-911 is fully operational. Radio will likely remain the only form of transmission to vehicles. Many EMS and fire departments are volunteer-based and thus face resource constraints.

Iowa greatly benefited from hiring a consultant to guide it through the transition. Furthermore, as NG-911 requires more hardware and software, there is significantly more downtime at PSAPs than on the previous system as system maintenance and software upgrades are required periodically. This has been a key challenge for Iowa, as PSAPs are coming offline during upgrades more often than is optimal. Because of this, Iowa is currently installing a secondary (back-up) ESInet to selected PSAPs (based on call volume) to eliminate the down times it is currently experiencing.

Vermont Interview Regarding NG-911

Contact: David Tucker
Executive Director
Vermont Enhanced 911 Board.

Where did Vermont look for an implementation model?

At the time of the first installation, there were no models to base the system on. NENA (National Emergency Number Association) information was used as an eventual basis.

When did it all start? How long did various parts of implementation take place?

Vermont had to wait for certain functionality to be created as it moved through the current contract period. The state is recognized as having one of the more advanced GIS applications related to 911, but the current vendor is still playing catch up to get on the same plane as we are in terms of using GIS as part of the program.

The state has a bid out right now (due to the contract term ending next year) and will know soon how many vendors can really match what Vermont is looking for, but it is too soon to say whether the market has caught up with the rhetoric.

The current vendor is not as far along as they claim to be. Part of the problem is thought to be that there are not yet enough adopters to warrant the behind the scenes work that is required to really meet the promise of next generation 911. In other words, the vendors still have to support the legacy systems that are in widespread use, and the time it takes to make incremental improvements with the legacy systems takes time away from really and thoroughly establishing any vendor system as next generation 911 compliant. They are getting there, but are not yet.

The current installation went live in May, 2011, but certain functionality, most of it in the GIS arena, are still to be delivered.

If Rhode Island is considering taking this step, you should do it, but make sure you understand what you want and what the vendors tell you they can deliver to ensure it is a good match. The ability to accept video and other related data is one of the big promises of next generation 911, but we are not aware of any vendor offering this as standards are still being developed.

What type of hardware/software was installed? Were things rejected or were there changes in direction?

A fully hosted, next generation 911 system that includes the EsiNet. The single vendor is responsible for all aspects of the system.

The transition went fine but the long time between turning up the system and finalizing certain deliverables has been a disappointment.

Lessons learned?

A tighter contract for the next installation is needed. Too much trust was put on the word of the vendor and that has led to some frustration as the state waits for the work to be finished.

What do you know now that you wish you knew then? What gave you (or gives you) headaches about the system?

There is a clear gap between what promoters of next generation 911 claim to be advantages and what the vendors can actually provide. Next generation 911 is the right way to go, but being too far ahead of the rest of the system has meant that Vermont has had problems as noted above.

The state also made a mistake by deemphasizing the impact on the behind the scenes work that the Enhanced 911 Board does to support the system (mostly again in the GIS arena). This has cost time that the state could be spending on related work.

The call handling portion of the solution has been stable and we have not experienced outages. The system is fully redundant and there have been no concerns with that portion of the system.

What attitudes did you face on the ground before and during implementation?

Because Vermont chose to create a single system run by an independent Board (though members are appointed by the Governor, they don't sit in an agency or department), it has not experienced the challenge of having to get multiple jurisdictions, each with their own structure, costs and ideas, to collaborate. The Board does not run the PSAPs, but members of the Board run three and a stable system is in place. Each of the 8 PSAPs back each other up, because they are part of the same system, and sufficient time is spent training and certifying call takers so that callers to 911 receive the same level of service regardless of which PSAP actually answers their call.

Most people don't understand that there is a difference between 911 call taking and emergency dispatching, and the lack of knowledge about how much further advanced Vermont is has resulted in some incorrect statements coming from policy makers who may only know that they or their mother called 911 once (and got good service, but they don't understand what is involved in that).

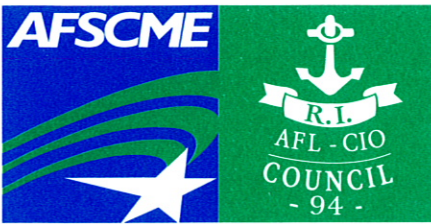
911 is one of those services that no one thinks about until they need it, and then it has to be perfect, so the Board spends a lot of time ensuring the experience is good.

What has the perception of NG911 been since it was rolled out?

No one outside of the system knows what NG-911 means. They only care about whether their call results in the ambulance or police or fire arriving on time. No one who knows anything about next generation 911 would want to go back to the old days of Verizon, but we toil in anonymity so long as we don't screw up.

Addendum: Responses to Report

1. AFSCME Rhode Island Council 94
2. Department of Public Safety, RI E-911
3. RI League of Cities and Towns



We Make Rhode Island Happen

AFSCME Rhode Island Council 94

American Federation of State, County & Municipal Employees, AFL-CIO

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MEMO TO: Joint Municipal Shared Services Study Commission Members

MEMO FROM: Jim Cenerini, Legislative Affairs/Political Action Coordinator & Staff Representative

SUBJECT: Applied Social, Economic and Regulatory Analysis Dispatch Report

DATE: October 7, 2014

Council 94 does not oppose all efforts of regionalization, consolidation, or sharing of services.

However, Council 94 has several concerns relating to ASERA's "Rhode Island Emergency Dispatch Analysis" that we hope the commission will take into account:

- The analysis overlooks that the localization of the emergency dispatch can be more effective and time sensitive. Response times are critical in emergency situations. As Glen Biddiscombe, Director of the Burrillville Emergency Management Office/subcommittee member aptly points out, a centralized tele-communicator may have trouble identifying which of the four (4) Main Streets in Burrillville to correctly route first responders
- Next Generation 911 start-up costs, such as equipment procurement, legal work, technology upgrades, and collective bargaining all need to be calculated to determine if a consolidation will yield real savings. With the sharp decline of Municipal General Revenue Sharing, the state budget may not have capacity to adequately fund communities' necessary enhancements.
- Consolidation processes that generally work best are locally driven, carefully analyzed, approved by the public, and contains union recognition provisions to protect employees' collective bargaining rights.
- Dispatch Consolidation and NG-911 implementation may be premature. Unified regulations and technological standards are not available yet. As David Tucker, Vermont Enhanced E-911 Executive Director, states: "There is a clear gap between what promoters of next generation 911 claim to be advantages and what the vendors can actually provide. Next Generation 911 the right way to go, but being too far ahead of the rest of the system has meant that Vermont has had problems as noted above. . . . No one outside of the system knows what NG911 means. They only care about whether their call results in the police or fire arriving on time." (pg. 17 ASERA report)

Council 94 appreciates the time, energy, and effort dedicated to consideration of Dispatch Services consolidation. While we look forward to the final report, Council 94 cannot support a concept that is not fully fleshed out or adequately funded.

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RI E911 RESPONSE TO ASERA
(APPLIED SOCIAL, ECONOMIC AND REGULATORY ANALYSIS)
RI EMERGENCY SERVICES DISPATCH ANALYSIS

PREPARED FOR THE JOINT MUNICIPAL SHARED SERVICES STUDY COMMISSION

BY THE TAUBMAN CENTER FOR PUBLIC POLICY – BROWN UNIVERSITY
PROVIDENCE, RI

SEPTEMBER 16, 2014

RI E 9-1-1 will respond to the ASERA Analysis (Study) Report in their order of appearance.

Executive Summary

The ASERA Study indicates in the Executive Summary that there are two options to consolidate municipal dispatch centers into regional dispatch centers by way of a mechanism entitled, “Horizontal Consolidation.” The second option is to combine telecommunicator and dispatch roles into consolidated regional centers by way of a mechanism entitled, “Vertical Consolidation.”

RI E 9-1-1 will not address either of these two options, Horizon Consolidation or Vertical Consolidation, as this is outside the purview of our authority. Merely, RI E 9-1-1 will simply state that these are two different options that were proffered by the ASERA Study and that presently, as indicated, RI E 9-1-1 receives incoming 9-1-1 emergency calls at our Primary PSAP at 311 Danielson Pike, North Scituate, RI, and transfers those calls to the local service (police, fire, medical) providers for dispatch.

Existing E 9-1-1 Architecture

The existing 9-1-1 architecture that was identified in the ASERA Study includes four basic links in the transmission chain between the 9-1-1 call initiator and the first responder (figure 1 of the study). This present RI E 9-1-1 architecture is correct.

Call Initiation

The information contained in the Call Initiation portion of the ASERA Study is correct as to the calls received daily by RI E 9-1-1 and that 75% of those calls presently originate from wireless devices. Calls, on average, take approximately 80 seconds (for a wireline call) to 89 seconds (for a wireless call) to process. A wireline caller’s subscriber information, whether listed, unlisted or unpublished, is populated at the telecommunicator’s work station from information provided to RI E 9-1-1 by wireline

telecommunications providers and contained within the RI E 9-1-1 ALI (Automatic Location Identification) MSAG (Master Street Address Guide) wireline database. A wireless caller's location information, telecommunications carrier and cellular telephone number is displayed at the telecommunicator's workstation from information provided to RI E 9-1-1 by the wireless telecommunications providers directly and in conjunction with a third party vendor (TCS or Intrado).

Currently, on the average, less than 4% of our incoming 9-1-1 calls enter into queue. The remaining portion of the Call Initiation overview is correct.

Operation of the PSAP

On the average, a minimum of six telecommunicators, including one supervisor, are on duty at any given time and receive incoming 9-1-1 calls generated within Rhode Island. Traditionally, RI E 9-1-1 telecommunicators, once the transfer is made and verified, leave the transferred call and go on to the next incoming 9-1-1 call. The exception to this process is in five distinct instances. In these instances which are identified below, RI E 9-1-1 telecommunicators usually stay on the line for the entire duration of the call. Instance (1) a 9-1-1 call involving or alleging domestic violence; (2) a 9-1-1 rescue call requiring pre-arrival medical instruction (RI E 9-1-1 telecommunicators are certified in Red Cross First Aid and CPR protocols.); (3) a 9-1-1 call regarding a potential suicide; (4) a 9-1-1 call placed by a young child whose caregiver is not available, incapacitated or requires immediate assistance; and (5) a "hybrid" call such as a caller(s) lost in the woods or waterways.

As stated in the ASERA Study, this above mentioned method of transferring calls has worked well for RI E 9-1-1.

Current Role of Local Dispatch Centers

Traditionally in Rhode Island, the local service provider (police, fire, medical) has assumed the duties of dispatching and providing services within their own geographic locale and community. Presently, the Westerly Ambulance Corp., Cranston Fire and North Kingstown Fire receive, from RI E 9-1-1, both verbal and CAD (Computer Aided Dispatch) transmitted 9-1-1 caller ANI (Automatic Number Identification) and ALI (Automatic Location Identification) information.

First Responders

RI E 9-1-1 would respectfully state that this is outside our purview and would leave that information to the local service responders.

Current Plan for NG-911 Implementation

NG-911 (Next Generation 9-1-1), also known as Text-To-9-1-1, is an Internet protocol (IP) based system that will allow individuals to contact RI E 9-1-1 via text technology. Presently, RI E 9-1-1 has developed a plan for the implementation and testing of the NG-911 platform in Rhode Island, whereby text messages will be received at both our Primary and Alternate PSAPs.

At this time, RI E 9-1-1 is not aware of any specific plans of any local dispatch center for the implementing, or not implementing, NG-911 technology.

Challenges Resulting from Rhode Island's NG-911 Blueprint

Interpretation of Text Messages

RI E 9-1-1 telecommunicators will ascertain the nature and the location of a call by way of either a text message or a traditionally received voice call, and will transfer that information verbally to the appropriate local service provider. The process of transferring a text-originating 911 call may not be as timely as transferring a voice-originating 911 call due to the inherent nature of text messaging and possible delays in transmission and receipt of text messages.

Locating the Text Initiator

The process of transferring a text-originating 911 call may not be as timely as transferring a voice-originating 911 call due to the inherent nature of text messaging and possible delays in transmission and receipt of text messages. Additionally, we have concerns relative to the accurate receipt of the texting parties X/Y coordinates (latitude and longitude), as a delay in the transmission or receipt of the text may cause us to receive "stale" location information.

Benefits of Implementing NG-911 Technology at Local Dispatch Centers

Due to the infancy of NG-911 technology and the ongoing evolution of NG-911 software, RI E 9-1-1 cannot proffer an opinion on the benefits of implementing NG-911 technology at the local dispatch centers.

Reduces NG-911 Strain on Telecommunicators

Please see above.

Reduces Communication Errors and Delays Between the PSAP and Local Dispatchers

Please see above.

Expediting Clarification Requests from Dispatchers to Initial Call Center/Texter

Please see above.

Challenges of Introducing NG-911 Technology at Local Dispatch Centers

Lack of Technology Regulation or Coordination

Due to the infancy of NG-911 technology and the ongoing evolution of NG-911 software, it is unknown at this time if any entities, Federal, State or otherwise, will establish NG-911 technology protocols and interoperability of communication and emergency equipment.

Municipal Costs of Implementation and Upgrades

Due to the infancy of NG-911 technology and the ongoing evolution of NG-911 software, RI E 9-1-1 cannot proffer an opinion on the potential costs or concerns that the local service provider may face in their receipt of future NG-911 transmissions.

Options for Structural Change

Due to the infancy of NG-911 technology and the ongoing evolution of NG-911 software, RI E 9-1-1 cannot proffer an opinion on any options for structural change.

Horizontal and Vertical Consolidation

Due to the infancy of NG-911 technology and the ongoing evolution of NG-911 software and the likelihood of future rules, regulations, statutory requirements, government oversight, technology updates and system changes, RI E 9-1-1, with these uncertainties, does not proffer an opinion on horizontal and vertical consolidation.

Recommendation

As stated in the Study, vertical consolidation would "... involve significant uncertainty, greater complexity and a larger resource commitment" than horizontal consolidation.

While we understand the benefits of both horizontal and vertical consolidation and acknowledge that there would likely be various costs associated with either form of consolidation, we proffer no opinion at this time.

Pilot Program

RI E 9-1-1 will perform its job in accordance with our received instruction(s) and will strive to maintain its level of excellence in serving the public safety needs of the citizens and visitors of the State of Rhode Island.

Caveats to the Analysis

As the Study stated, due to the nature of NG-911 and its developing technology, there are unknowns and/or uncertainties that will be overcome as the process develops.

Respectfully submitted,

William Gasbarro
Gregory Scungio

Co-Directors, Rhode Island E 9-1-1 Uniform Emergency Telephone System Division



Rhode Island League of Cities and Towns

Kayleigh Pratt
Legislative Fiscal Analyst
Senate Fiscal Office
Room 117, State House
Providence, RI 02903

October 22, 2014

RE: ASERA Draft Report

Dear Kayleigh,

While the League supports shared or regionalized services as a legitimate means of cost reduction and improved efficiency, it is also the position of the League that the decision to move in the consolidation direction for any city or town should be made by the taxpayers who pay for their services in that city or town.

With regards to the specific recommendations in the ASERA report, we understand that the NG-911 protocol will require increased upfront costs and that regionalization (horizontal consolidation) will reduce the upfront costs.

We are not yet persuaded that the cost – benefit test has been met. Does the texting component really add value to the total emergency response effort? We also have concerns that there may be additional personnel costs associated with monitoring the NG-911 protocol. The report did not deal with this issue.

We look forward to working with you in the future on this and other shared services issues.

Sincerely,

A handwritten signature in black ink, appearing to read "Peder Schaefer", written over a large, stylized flourish.

Peder Schaefer
Associate Director