NG911

NEXT GENERATION 911
FOR LEADERS IN LAW ENFORCEMENT

A GUIDE FOR LAW ENFORCEMENT OFFICIALS

5 WAYS NG911 CAN IMPROVE YOUR AGENCY

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Transforming Law Enforcement with NG911

Resources

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ON THE COVER: Next Generation 911 creates an environment in which officers have the latest and most comprehensive information at their fingertips, no matter where they are.

TRANSFORMING LAW ENFORCEMENT WITH NEXT GENERATION 911

In 1968, the creation of 911 as the universal emergency number established a link between first responders and those in need. However, since the 1960s, the way the public communicates has changed dramatically, and the nation's 911 system has failed to keep up. More than 80% of Americans now use smartphones and mobile devices to send and receive rich data such as text messages, photos and videos.

Today, when the public attempts to "call" 911 on a mobile device, many modern features cannot be used with the legacy emergency communication infrastructure. Because of this, critical information about the emergency often cannot be shared. While the public has rich digital data at their fingertips, 911 telecommunicators are still limited to a largely voice-centric world.

To revolutionize emergency communications, the 911 system urgently needs to upgrade to Next Generation 911 (NG911). NG911 allows public safety answering points (PSAPs) to take advantage of digital technologies and harness breakthrough innovations. With NG911's ability to transfer calls and data among PSAPs, communities will be more resilient thanks to increased redundancy and call overload backup—so every emergency call is received and answered.

With NG911 capabilities, emergency telecommunicators will obtain and share digital information from bystanders or sensors at the scene. This includes photos, texts, audio and video; information from medical devices; data from car sensors and building monitoring systems; and surveillance footage. Sharing dispatchable location information is a key improvement, which will provide better situational awareness and help law enforcement find victims and arrest suspects more quickly. These forms of information may also be used later as evidence in the prosecution of suspected criminals, and shared with other law enforcement organizations and appropriate agencies.

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The NG911 infrastructure can link the rich data coming from the public to 911 telecommunicators, and then to officers in the field. This data sharing is enabled by both NG911 and broadband networks such as FirstNet, a wireless network for public safety responders that is being rolled out across the nation. FirstNet and NG911 are separate but related efforts—two equal and essential parts of one whole: our nation's public safety communications system. New applications will take advantage of these networks and become additional tools for law enforcement to improve emergency response.

With NG911, the data provided to law enforcement from 911 centers has the potential to move beyond the immediate needs of a specific incident. As more detailed information about an incident is sent to emergency responders, more effective, efficient protection will be provided to the public. The underlying infrastructure also allows true interoperability among emergency responders and other public-serving agencies, to reach those in need.

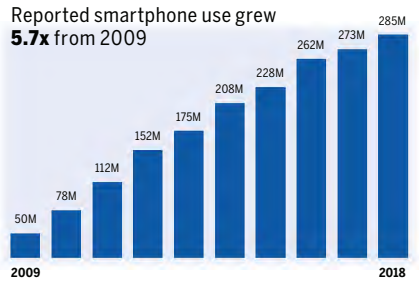
Law enforcement leaders should embrace the transition to NG911 and recognize its importance to public safety. We must take advantage of new technologies to enhance communication and increase access to data in order to improve the protection we deliver to our communities. ■

Eddie L. Reyes
Director of Public Safety Communications
Prince William County, VA
IACP Communications & Technology Committee Chairman

SMARTPHONES IN ACTIVE USE*

More than 285 million Americans now use smartphones to send and receive rich data such as text messages, photos and videos.

**from CTIA 2019 Annual Survey*



UNDERSTANDING NEXT GENERATION 911

WHAT IS NEXT GENERATION 911 (NG911)?

NG911 is new technology that allows the public to send digital data—such as videos, images and texts—to 911 call centers or public safety answering points (PSAPs). NG911 technology also enables call and data transfer among PSAPs, vastly improving the 911 system's capacity and resiliency.

In Vermont, a state that has made significant progress transitioning to NG911, telecommunicators have the ability to send and receive text messages as part of NG911 deployment, rather than through software add-ons to legacy technology. Texting has vastly improved accessibility to 911 for the deaf and hard of hearing community. In addition, according to Barbara Neal, Executive Director of the Vermont Enhanced 911 Board, texting is key for individuals who may find themselves in a situation where a voice call to 911 would endanger them further. This might include domestic violence, hostage or active shooter situations. "We have had many instances where text-to-911 was successfully used to summon help in serious emergencies," says Neal.

WHY DO WE NEED NG911?

NG911 modernizes the current 911 infrastructure to accommodate how most people communicate today—through mobile and digital devices. NG911 allows the public to send digital data directly to 911 PSAPs. It also lets PSAPs receive data from other transmitting devices such as wearable medical devices, car computers, building alarms and gunfire sensors. Another major advantage made possible by NG911 is faster network communication and call load sharing between PSAPs. In mass casualty incidents or natural disasters—when PSAPs can become overwhelmed by calls—NG911 allows for calls to be automatically transferred or rolled over to another available 911 call center. NG911-based technology has even enabled states to interconnect their 911 systems with neighboring states. For example, North Dakota PSAPs are now able to transfer calls to the Minnesota 911 system without losing the valuable Automatic Location Identification (ALI) data that accompanies North Dakota calls. This lets Minnesota officials accurately pinpoint the location of the caller.

NG911 will allow dispatch to receive incoming videos and pictures, then push them to a patrol vehicle's in-car computer or officer's smartphone.

In Vermont, all calls from overly busy PSAPs flow to available PSAPs. Says Neal, "Our NG911 systems have supported more efficient call distribution, which has allowed Vermont to truly operate as one statewide system." According to Neal, "Calls can flow seamlessly from one PSAP to another if the primary PSAP is unable to answer a call for any reason. This has minimized the possibility of calls waiting in a queue during times of high call volume."

In 2011, when Tropical Storm Irene arrived in Vermont, the state experienced extensive flooding and damage, especially in southern Vermont. "The Rutland PSAP–our second busiest call center in terms of call volume—was in danger of flooding and had to be evacuated," explains Neal. "Because of our call distribution plan—and without any manual intervention—calls destined for the Rutland PSAP were automatically routed to available call-takers in the remaining PSAPs."

Vermont's call distribution was made possible by the state's Emergency Services Internet Protocol Network (ESInet). ESInets are designed to interconnect PSAPs with a high level of redundancy and resiliency to ensure that the network can continue to deliver 911 calls even if some of the circuits or end points are no longer functioning.

If Vermont had not had the NG911-enabled ESInet in place, a single PSAP with only three specific positions would have been handling the rollover calls from Rutland's busier, four-position center. Says Neal, "The likelihood of calls waiting in the queue or going unanswered would have been significantly greater."

WHY IS NG911 IMPORTANT FOR LAW ENFORCEMENT?

For law enforcement, NG911 has wide-reaching applications. Modern buildings increasingly are outfitted with video monitors, digitally connected alarms and sensors. With NG911, vid-

eos or images from an evolving incident can be shared with the PSAP, providing invaluable information for situational awareness. The information can be shared with responders, helping them make more informed decisions as they arrive on scene.

"With access to data from security cameras and building sensors, law enforcement will arrive on the scene with valuable information that will help increase officer safety," says Eddie Reyes, Director of Public Safety Communications, Prince William County, Virginia.

"Data from NG911-enabled technology is a game changer for law enforcement," says Reyes. "In an active violent incident, it's extremely helpful to know the number and location of suspects as well as the exact location of any victims. Knowing what is happening at the scene is also crucial for officer safety during active violent incidents, which have become more frequent." The data from NG911 can also play an important role in post-incident investigations, providing evidence in the form of photos, videos and texts.

WHAT IS FIRSTNET AND WHY DO WE NEED BOTH NG911 AND FIRSTNET?

FirstNet is a wireless nationwide network that gives public safety a dedicated network for communicating with one another in the field, and its basic infrastructure allows responders to access important digital information from PSAPs. Through FirstNet, critical information about the scene of an incident such as building layouts, potential injuries, photos, videos and real-time updates, and information provided by the public to PSAPs via NG911 can be securely shared. The dedicated FirstNet network provides priority and preemption to first responders, ensuring that they are able to communicate with each other when public communication channels are overloaded.

Together, NG911 and FirstNet are two equal, essential parts of an improved emergency communication system that moves public safety communications into the digital age. They complement each other and, when coordinated, will enable the exchange of rich data between and among the public, 911 and first responders.

WHAT'S THE DIFFERENCE BETWEEN FIRSTNET AND NEXT GENERATION 911?

You have likely heard of FirstNet because it was created with government oversight and was initially funded by Congress. It's a dedicated public safety broadband network that allows for local, regional and nationwide wireless communication among responders.

You may not have heard of NG911 because it's being implemented independently by states, regional authorities, counties and municipalities. NG911 technology is based on software applications running on high-speed digital networks. This technology can provide PSAPs with improved location accuracy, caller information and other situational awareness data related to specific incidents. The NG911 infrastructure increases the ability to receive multimedia as part of 911 calls from mobile phones and devices, as well as text messages and faster, richer call information.

NG911 enables communities to be more resilient thanks to a more robust emergency system. As Harriet Rennie-Brown, State 911 Administrator for Michigan—another state that has made significant NG911 progress—explains, "Our emergency system benefits in many ways from more redundancy in the form of built-in fail safes and backups." She describes how NG911 has led to large-scale system improvements in Michigan. "Overall, NG911 has provided a more robust emergency system infrastructure. We have fewer network outages and we know more about any outages that do occur," says Rennie-Brown. "If there is an outage in the telecommunication system, the network provider is able to track it down immediately because NG911 has enabled very sophisticated monitoring systems to be set up."

NG911-enabled technology results in improved response times and lives saved.

Once NG911 is implemented, law enforcement and other emergency service providers will be able to reap more benefits from FirstNet. NG911 is the other half of the emergency communication equation, because it allows the public to send relevant data to call centers and enables law enforcement to have access to this data to make mission-critical decisions.

"FirstNet and NG911 are separate but connected efforts," explains Reyes. "New applications can take advantage of these two networks and will give law enforcement better tools to make their job of protecting communities safer, easier and more effective."

HOW SOON WILL NG911 BE IMPLEMENTED IN MY COMMUNITY?

The progress for implementing NG911 varies widely across the nation. Some states, like California, Pennsylvania and Texas, have adopted statewide plans that include governance, funding, system components and strategy. Many, such as Alabama, Kansas and North Carolina, have NG911 implementation in progress. Other states, including Vermont, Massachusetts, Maine and Indiana, have completed the initial installation of NG911 components, and are beginning to realize the benefits of NG911 and interconnected PSAPs all working together to improve emergency communication. ■

NG911 FOR LAW ENFORCEMENT LEADERS

How Law Enforcement Benefits from Next Generation 911

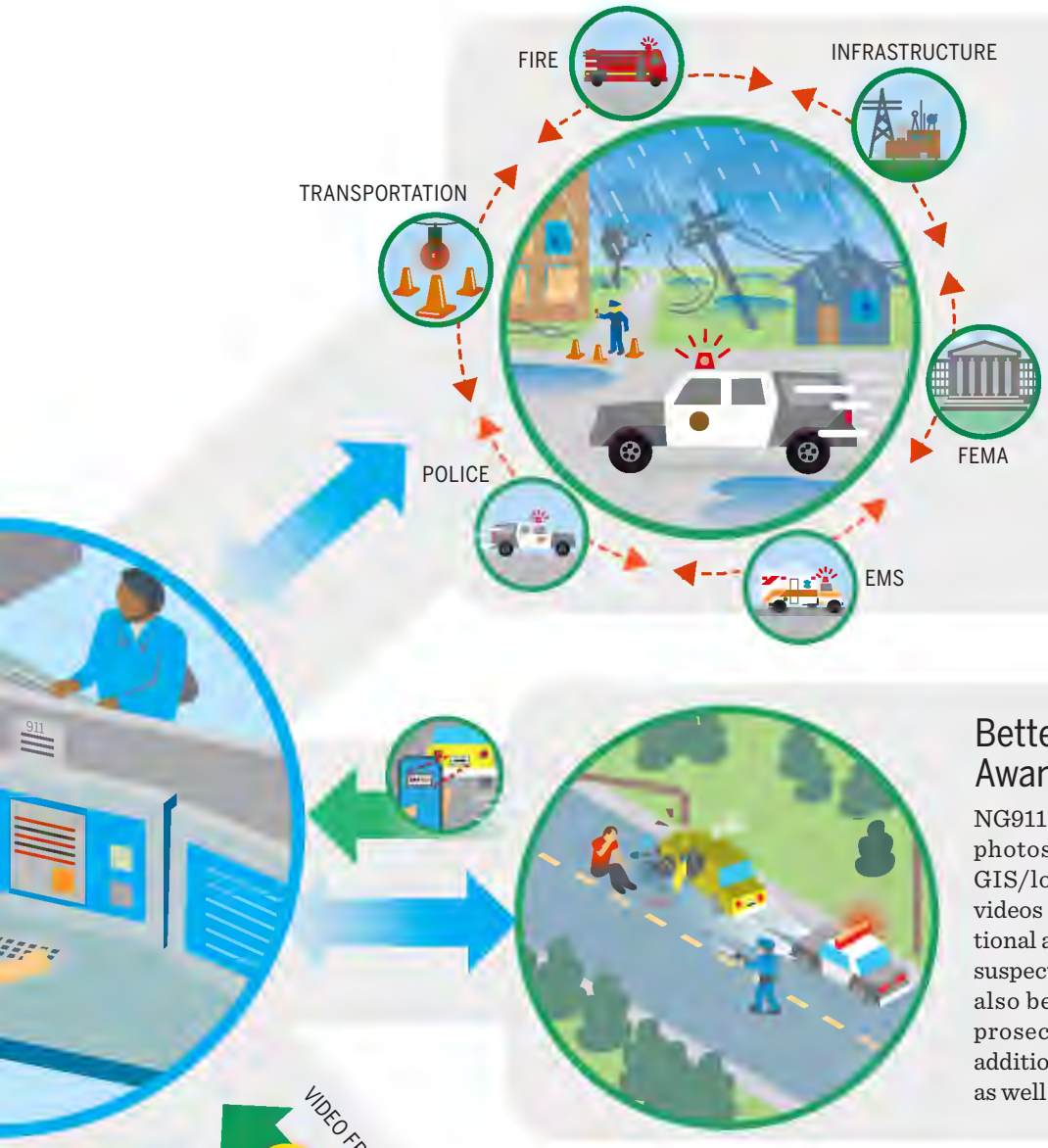
Next Generation 911-related technologies will provide new opportunities to keep law enforcement and communities safer. The following scenarios offer a non-technical depiction of how new technologies will make available information that leaders need to ensure safe, efficient and effective responses to a variety of incidents.

Enhanced Location Accuracy

With improved location accuracy, law enforcement will reach crime scenes and other incidents more efficiently. This is important in a variety of environments like rural areas or parks, densely populated urban areas, or on freeways. NG911-enabled mapping technology enables emergency responders to reach incident scenes quickly, even if callers are not aware of their exact location.

Safer Communities

Once law enforcement is able to easily and quickly access media such as photos and video, citizens can more easily report crimes, enabling officers and deputies to respond more swiftly and efficiently. For example, a witness might capture a video of a robbery in progress and send it to 911 so law enforcement can literally get "a picture" of the situation and the suspect.



Redundancy & Multi-Agency Interoperability

During a natural disaster or other large-scale emergency, law enforcement and the public need to know their 911 system will be there. In the case of a large-scale incident, NG911 helps protect against call overload since the system can re-route calls and other data to alternative PSAPs. In cases where a PSAP is rendered inoperable, calls can also be transferred to an operational agency.

Better Situational Awareness

NG911 will provide a variety of new data — photos, video footage, text messages, GIS/location information, surveillance videos and more — to provide better situational awareness, and to find and arrest a suspect more quickly. The information may also be used later as evidence during prosecution, and can be shared with additional law enforcement officials, as well as other appropriate agencies.

Improved Officer Safety

In a hostage situation, information about the inside of an active crime scene is key for officer and hostage safety. Access to security cameras and building sensors will provide valuable information for increased officer safety, such as number of suspects, hostage location and more. Pre-arrival information is also crucial for officer safety during active violent incidents.

With NG911, updates like a suspect's description can be accompanied by photos or video sent in by a witness.

5 WAYS NG911 CAN IMPROVE YOUR AGENCY

The potential benefits of an NG911 system are significant—from safer law enforcement officers to better service for your community

NG911 is the upgrading of technology across the United States from the decades-old telephony-based 911 system to a modern system that allows improved, digital, internet protocol (IP)-based communication between citizens, 911 and emergency responders.

According to Eddie Reyes, Director of Public Safety Communications in Prince William County, Virginia and the IACP Communications & Technology Committee Chairman, the benefits of NG911 for police, sheriffs and highway patrol are tremendous. "The move to NG911 is imperative in order for modern smartphone features—such as the ability to send text messages, photos and videos—to be compatible with current emergency communication systems, and law enforcement must embrace this transition."

Here are some of the major benefits law enforcement can expect by transitioning to NG911:

1 IMPROVING OFFICER SAFETY

With NG911, a 911 "call" will take very different forms: 911 call centers or public safety answering points (PSAPs) will be able to receive, process, share and store text, pictures and videos received from callers and other interconnected services (e.g., alarm companies). Even better, that information can be quickly shared with police, sheriffs and other responders, giving them more precise information to make their job safer and more efficient. NG911 will most significantly improve law officer safety through increased situational awareness. It creates a digital infrastructure to receive and transmit a variety of rich information. For example, in a bank robbery scenario, access to live video from cameras can provide valuable information about the number and location of suspects, type of weapons involved, possible injuries and the number of victims. In any type of hostage situation, information about the inside of an active crime scene is key for officer, as well as hostage, safety. Digital feeds from security cameras and building sensors will provide helpful details. Information that can be used by incident command is also crucial for officer safety during active violent incidents.

NG911 will allow PSAPs to share intelligence from other responders—provided via FirstNet—about a dangerous situation (See page 2 to learn how NG911 and FirstNet will work together). As the emergency communications hub, 911 PSAPs can share and contribute digital information to improve situational awareness for responders in the field.

2 ENHANCING LOCATION ACCURACY

More than 80 percent of all 911 calls are made from cell phones instead of landlines. In some areas, calls from mobile phones are routed to state police or other PSAPs miles away to determine a caller's location and the nature of the emergency, and then transferred once or twice before responders are dispatched.

With NG911, the technology will essentially enable the 911 call to "find the appropriate PSAP," rather than the PSAP being required to "find the caller," as currently in place. And PSAPs will be able to zero in on a caller's location—especially wireless callers—faster and more accurately so law enforcement can quickly find them.

Barbara Neal, Executive Director of the Vermont Enhanced 911 Board, explains how NG911-based technology will enable improved location information in that state. "Vermont is working with our current system provider to integrate location data that is provided by the caller's cell phone, which should improve both the speed and accuracy of wireless location information as compared to the location being provided by cell towers," says Neal.

Texas 911 officials are starting to experience the same results. "Once we start implementing NG911 statewide, we will have more accurate location information," explains Melinda Crockom, Public Education Coordinator for the Texas Commission on State Emergency Communications. "There are some Councils of Governments in

NG911 will deliver more comprehensive information on which critical response decisions can be based.

> **We would significantly increase the apprehension and case closure rate with the amount of evidence that can potentially flow into a PSAP.**
>
> —**Eddie Reyes,** *Director of Public Safety Communications in Prince William County, Virginia and the IACP Communications & Technology Committee Chairman*

our program that have integrated device based clearinghouse technology, and are already receiving more accurate location information."

3 DELIVERING HELP, FASTER

Amongst its many benefits, NG911 will improve response times when calls are transferred from other referring agencies, because a caller's location is automatically matched to the appropriate 911 call center serving that area—limiting delays and misdirected calls. The upgraded emergency response system also supports better public service in a natural disaster or other emergency when many calls are coming in from the same vicinity. Overloaded NG911 call centers will automatically reroute calls to other PSAPs, avoiding lost calls or the chance of callers receiving a busy signal.

"Once we start implementing NG911, we will have 254 PSAPs in our program that will be NG911 compliant," says Texas' Crockom. "We will have an interoperable, interconnecting NG911 system throughout the state. This means there will be significant improvements to where calls will be routed."

Many states also benefit from better communication and call transfer capabilities between neighboring states. North Dakota and Minnesota worked together to establish the nation's first interstate 911 call transfer capability, which includes call-back and location functionality. Vermont is coordinating efforts with New Hampshire to ensure that any emergencies that happen near their borders are handled smoothly.

Says Vermont's Neal, "We are currently working on an Inter-ESInet arrangement with New Hampshire 911. Once established, this will allow either state to transfer misrouted 911 wireless calls and caller location between systems. This will help to better serve callers on or near our state boundaries."

Texting to 911 is another potentially life-saving benefit associated with

NG911. When individuals can't make voice calls or speak without putting themselves at risk, they can text for help. Although "non-NG911" texting to 911 is currently available in some areas, it will be a commonplace application for states that have upgraded to NG911.

Texting is particularly helpful when individuals are in a situation where a voice call to 911 would heighten their risk. This includes domestic violence victims or those in hostage situations. Neal notes that Vermont PSAPs receive 911 text messages and are also capable of initiating outbound texts. "This outbound texting capability has proven useful in contacting wireless callers who have hung up," she explains. In this scenario, PSAPs receiving possibly inadvertent calls are required to attempt to recontact the caller. Using text, a message can be sent to the caller to confirm he or she is safe. States like Vermont and Indiana have found they are more likely to get a response to a text than a phone call, and have saved significant time and resources "closing" these calls.

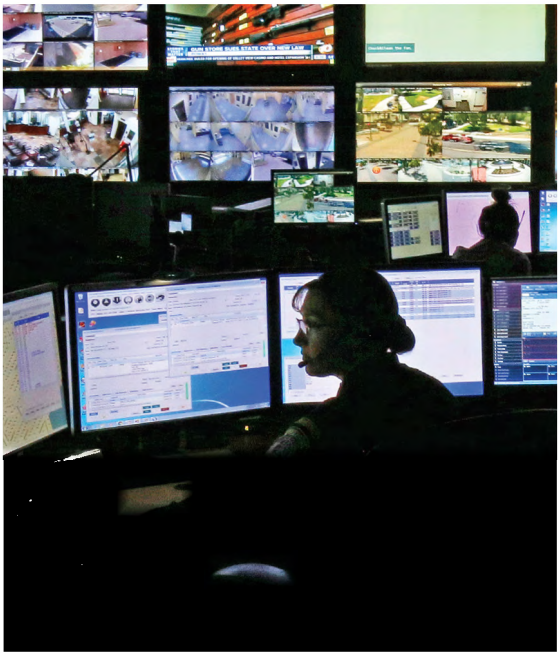
Jason Horning, Next Generation 911 Program Manager for the North Dakota Association of Counties, explains that for individuals with special needs, texting is a critical benefit. The deaf and hard-of-hearing or physically disabled can easily text 911 from their phones without needing extra devices, such as teletypewriter (TTY) devices.

"NG911 is making North Dakota a safer place for the deaf and hard-of-hearing community through the deployment of text-to-911 service," explains Horning. "That peace of mind is particularly important even if they never make a 911 call."

4 MAKING LAW ENFORCEMENT SMARTER

A number of innovative NG911-based technologies are in development and some are already in use. All hold the promise of making law enforcement officers smarter by tackling some of their major job challenges: not knowing exactly where they are headed, not knowing what they're walking into and not having clear communication with other emergency service agencies to respond effectively and efficiently.

NG911-based technology will allow officers to access data such as digital maps via the officers' mobile data terminals rather than verbally communicating the information. In addition, remote control sensors can provide real-time video updates even before responders arrive on the scene. The PSAP will get a data alert, but could also pull up a video feed showing what's happening inside buildings. Data from a gunfire locator or gunshot detection system also has the potential to be transmitted via NG911 technology.



NG911 will enable agencies to build a network of supporting PSAPs to prevent call overload.

Receipt and storage of evidence in the form of photos or videos will be very helpful when it comes to solving cases or taking them to trial. Photos of license plates or suspect vehicles sent by 911 callers can be useful to law enforcement in identifying and capturing suspects.

Virginia's Reyes explains, "We would significantly increase the apprehension and case closure rate with the amount of evidence that can potentially flow into a PSAP."

All of this rich data from digital tools and applications requires both NG911 and FirstNet—upgrading 911 to an NG911 infrastructure so that PSAPs can receive the information—and deploying a dedicated public safety broadband network to share improved data with first responders.

5 SAVING COSTS WHILE SAVING LIVES

Upgrading to NG911 is not inexpensive, but over time, agencies should save time and money through efficiencies. The reason: two or more NG911-connected call centers can distribute calls across a state or even across state lines. It may also make fiscal sense to share other costs for products and services such as GIS, translation, video relay and cybersecurity. It's easier, faster and more cost-effective to share improvements from the upgrade such as computer-aided dispatch or centralized call handling equipment. At the same time, communities retain local control.

Vermont's Neal believes that there is a lot of information that can be shared between states to make the technology transitions easier. "We encourage states to reach out to other jurisdictions who have made this transition and ask about the lessons learned, what resources they may be able to provide, and how the project went for them. Vermont shares its requests for proposals with other jurisdictions and also solicits input from others," she says. "Getting involved with national organizations such as NASNA, NENA and APCO is key. They all provide access to great resources." ■

CASE STUDY

IMPROVING LAW ENFORCEMENT IN MASSACHUSETTS

How NG911 Technology Streamlines Operations and Saves Lives

Massachusetts has many success stories to share since it began its transition to NG911. First responders spend less time trying to locate vehicle crashes or crime scenes thanks to enhanced mapping technology. 911 callers are more likely to be connected to the appropriate dispatcher with fewer call transfers. Domestic violence victims, who were once afraid to communicate because their abuser was present, can text 911 thanks to NG911-enabled technology.

The Massachusetts transition to NG911 included new equipment, an enhanced database with upgraded mapping functionality and a fiber network for all public safety answering points (PSAPs). Throughout the implementation process, officials worked systematically to ensure that NG911 was ready to go live.

The commonwealth was able to bypass some of the challenges that can stall upgrades. Instead of having to wait for individual counties or municipalities to vote on 911 improvements or raise funds, Massachusetts used its existing statewide 911 platform to upgrade the system. They gained financing through an additional surcharge on telephone bills.

"The monthly surcharge was increased by 50 cents for one year in order to fund the NG911 upgrade," explains Frank Pozniak, Executive Director of the State 911 Department. "The increase was approved by the Massachusetts Department of Telecommunications and Cable, an agency charged by Massachusetts law to review and approve the surcharge."

NG911 will push through timely and media-rich information.

The NG911 transition involved a major undertaking: the geographic mapping of the entire state to enable the visualization of contextual information when plotting an emergency caller's location. Once the geographic mapping was complete, some key benefits of NG911 were almost immediately apparent to officials. The mapping has proven to shave critical minutes off response times throughout the commonwealth. With improved location accuracy, law enforcement and all first responders can reach incidents more efficiently. This is especially critical in rural areas, parks, densely populated urban areas or on freeways. Ultimately, NG911-enabled mapping technology helps first responders reach callers quickly, even when the caller is not aware of or able to communicate their location.

"NG911-enabled mapping software provides our dispatchers with a visual display of the caller's location, which further enhances our ability to respond in a more accurate and expedited manner," says Kyle P. Heagney, Chief of Police for the City of Attleboro Police Department. "This is especially important if the caller is unfamiliar with his or her surroundings."

As part of its NG911 transition, Massachusetts also centralized 911 services by moving many smaller, local PSAPs to regional centers. The thinking was to centralize dispatching in order to share costs, as well as increase efficiencies and provide better services. While PSAP consolidation can be a controversial issue, in the case of Massachusetts, they consolidated where it made sense, while preserving as much local control as possible. The commonwealth started with 267 PSAPs and is now operating with 226.

While centralizing some 911 services has helped Massachusetts manage the process and offset technology costs, it is not essential to an NG911 upgrade.

"NG911 benefits all PSAPs—large, small and regional," explains Norm Fournier, Deputy Director of the Massachusetts' 911 Department. The technology upgrades have been equal across the state. "Eventually, we will be able to provide images and digital data. The Massachusetts NG911 system today provides wireless direct and texts to all PSAPs," he says.

GETTING LAW ENFORCEMENT TO THE SCENE FASTER

"Prior to NG911, all emergency cell phone calls were routed via the State Police PSAP and the call was then transferred to our police department," explains Chief Heagney. "The State Police had to assess the nature of the emergency and then transfer the call to the appropriate PSAP."

"The receiving PSAP would conduct a vetting process of the emergency call, make a number of critical decisions and then transfer the call again. If the emergency was a fire or medical, the caller would be transferred a third time, and the call would be vetted again by the fire dispatcher," says Heagney.

He bemoans how much time was spent vetting and transferring calls and how it delayed critical response times and was often subject to human error. "This vetting process was inefficient and sometimes ineffective," he says. Heagney is confident that the current system gets law enforcement to the incident faster and more prepared. They know where they are going and what to expect when they get there.

> **"NG911-enabled mapping software provides our dispatchers with a visual display of the caller's location, which further enhances our ability to respond in a more accurate and expedited manner."**
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Thanks to changes in wireless location acquisition technologies and GIS mapping, the exact location of the crash can be provided to police, fire, and EMS so they know which exit ramp or on-ramp is the closest.

"Today, with the introduction of NG911, if cell phone callers are within our community, they are automatically transferred to our PSAP. This has absolutely improved our response times to emergencies and allows for more accurate vetting of the emergency nature of the call," notes Heagney.

There are many success stories due to better location accuracy and improved response times. "I have personally observed a call where a person was suffering from a heart attack and called 911 from his cell phone," says Heagney. "The NG911 system mapped his location and the dispatchers were able to initiate a rapid ambulance response without a long vetting process to determine his location."

Heagney also cites specific success relating to two large transportation corridors that traverse the city of Attleboro: Route 1 and Route 1A, a segment of which runs along the Rhode Island border. Both highways are major hot spots for motor vehicle crashes.

"Many of these crashes involve out-of-state drivers who are not familiar with the area," says Heagney. "NG911 allows our dispatchers to pinpoint the accident scene and dispatch emergency resources within seconds."

According to Heagney, the same is true with Route 95, which intersects with U.S. Route 1 and I-295 within Attleboro. "Route 95 runs through our city and is a major contributor of our most serious motor vehicle crashes. Response time to these horrific crashes is vital."

Many times, callers are unable to provide a specific location or cannot articulate which exit ramp or on-ramp they are closest to. Thanks to changes in wireless location acquisition technologies and GIS mapping, the exact location of the crash can be provided to police, fire, and EMS so they know which exit ramp or on-ramp is the closest. The data coming in to the PSAPs eliminates guesswork.

Despite great strides over the past few years, the full potential of NG911 in Massachusetts won't be realized until PSAPs can receive and share video, photos and rich digital data from the public. According to Fournier, this functionality is currently being tested in the state in a lab environment, but is not widely available. Although the basic enabling technology is in place, Fournier estimates it could take years to establish the required standards and protocols for securely transferring such rich digital data from the public over the network.

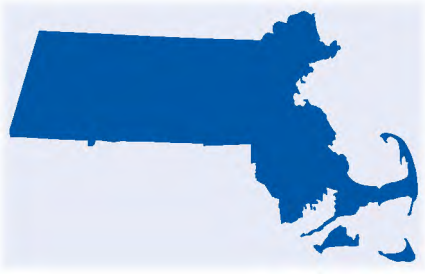
BUMPS IN THE ROAD

As with any major change, the transition to NG911 can have its challenges. In Massachusetts, some of the initial challenges included adapting to the new technology and getting all telecommunicators prepared for the transition. Training has also been a key part of the Massachusetts upgrade. NG911 officials were tasked with training 5,200 call takers and dispatchers, which was no small feat. "We also continue to train new hires on top of that number," says Fournier.

Some of the ongoing challenges include adapting to technology upgrades. "The new system receives new updates much more frequently than the legacy system," says Fournier, "So implementing the changes efficiently is crucial." Overall the state's implementation strategy called for careful planning and taking things slowly, which has led to its success. ■

FOURNIER OFFERS THESE FOUR MAJOR PIECES OF ADVICE TO STATES PREPARING FOR THEIR NG911 UPGRADE

1. **Test the system through pilot programs and in realistic settings to detect flaws.**
2. **Invest in extensive training.**
3. **Hire an independent security vendor to perform a scan or evaluate the security of the NG911 system.**
4. **Implement an effective change management process.**



For more information on Massachusetts' NG911 efforts, check: https://www.mass.gov/service-details/next-generation-911

NG911 RESOURCES

HERE ARE SOME RESOURCES TO HELP YOU LEARN MORE ABOUT NG911

NATIONAL 911 PROGRAM
911.gov

CONGRESSIONAL FIRE SERVICE INSTITUTE
https://www.cfsi.org/

CTIA - THE WIRELESS ASSOCIATION
www.ctia.org

FEDERAL COMMUNICATIONS COMMISSION (FCC)
fcc.gov

FEDERAL COMMUNICATIONS COMMISSION (FCC) TFOPA REPORT
https://transition.fcc.gov/pshs/911/TFOPA/TFOPA_WG2_Supplemental_Report-120216.pdf

FIRST RESPONDER NETWORK AUTHORITY—FIRSTNET
firstnet.gov

IJIS INSTITUTE
www.ijis.org

INDUSTRY COUNCIL FOR EMERGENCY RESPONSE TECHNOLOGIES (ICERT)
theindustrycouncil.org

INTELLIGENT TRANSPORTATION SYSTEMS JOINT PROGRAM OFFICE (ITS JPO)
its.dot.gov/research_archives/ng911/index.htm

INTERNATIONAL ASSOCIATION OF CHIEFS OF POLICE (IACP)
theiacp.org

INTERNATIONAL ASSOCIATION OF FIRE CHIEFS (IAFC)
iafc.org

NATIONAL ASSOCIATION OF STATE 911 ADMINISTRATORS (NASNA)
nasna911.org

NATIONAL ASSOCIATION OF STATE CIOS (NASCIO)
nascio.org

NATIONAL ASSOCIATION OF STATE EMS OFFICIALS (NASEMSO)
nasemso.org

NATIONAL CONFERENCE OF STATE LEGISLATURES (NCSL)
ncsl.org

NATIONAL EMERGENCY NUMBER ASSOCIATION (NENA)
nena.org

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)
nfpa.org

NATIONAL PUBLIC SAFETY TELECOMMUNICATIONS COUNCIL (NPSTC)
npstc.org

NATIONAL SHERIFFS' ASSOCIATION (NSA)
sheriffs.org

NATIONAL VOLUNTEER FIRE COUNCIL (NVFC)
nvfc.org

NG911 INSTITUTE
www.ng911institute.org

NG911 NOW COALITION
ng911now.org

NIST'S PUBLIC SAFETY COMMUNICATIONS RESEARCH DIVISION (PSCR)
https://www.nist.gov/ctl/pscr/about-pscr

POLICE EXECUTIVE RESEARCH FORUM (PERF)
www.policeforum.org

PUBLIC SAFETY TECHNOLOGY ALLIANCE (PSTA)
pstalliance.org

PUBLIC TECHNOLOGY INSTITUTE (PTI)
www.pti.org

SAFER BUILDINGS COALITION
saferbuildings.org

TEXAS A&M UNIVERSITY
Internet 2 Technology Evaluation Center
https://itec.tamu.edu/

TRANSPORTATION SAFETY ADVANCEMENT GROUP (TSAG) REPORT
http://www.tsag-its.org/wp-content/uploads/2018/04/NG911-WN-Report-August-30-2011.pdf

U.S. DEPARTMENT OF HOMELAND SECURITY (DHS) OFFICE OF EMERGENCY COMMUNICATIONS (OEC)
dhs.gov/office-emergency-communications

U.S. DEPARTMENT OF HOMELAND SECURITY (DHS) SCIENCE AND TECHNOLOGY DIRECTORATE
https://www.dhs.gov/science-and-technology

VERA INSTITUTE OF JUSTICE CENTER ON POLICING
https://www.vera.org/centers/policing

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