



Addressing Crime through Innovative Technology

**Fairfax County (Virginia)
Department of Public
Safety Communications
Next Generation 911**

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Community Oriented Policing Services
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CNA

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Introduction

The Fairfax County (Virginia) Department of Public Safety Communications, or Fairfax County 911, is the largest public safety communications center in the Commonwealth of Virginia and one of the 10 largest in the United States.¹ The agency's mission is to respond to and dispatch calls, monitor resources, and engage in regional coordination of emergency services. Its daily operations consist of answering 911 and nonemergency calls, dispatching public safety resources, coordinating interagency and regional services and responses, processing teletypes (e.g., warrants), and conducting mission critical systems maintenance, among other important tasks. The agency is an accredited 911 center for emergency medical dispatch in Virginia.

Fairfax County 911 serves as the primary public safety answering point (PSAP) or emergency communications center (ECC) not just for the county but also for several municipalities within the county that have separate non-county law enforcement agencies. These jurisdictions command their local law enforcement officers, so Fairfax County 911 transfers law enforcement-related calls to the appropriate agencies for local handling of police dispatch. Fairfax County 911 also supports local universities, such as George Mason University; military installations; and a variety of federal agencies in a manner similar to the independent jurisdictions.

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In 1981, only 26 percent of the United States had access to 911 services. The Fairfax County Public Safety Communications Center (PSCC) was one of the early adopters of 911 in 1981²—according to staff members, it was the second in the region to adopt 911 after Washington, D.C., in 1977. The PSCC, from its inception, was responsible for police dispatching. For efficiency, in 1986 the county government decided to consolidate all dispatchers from police and fire. In 1987, the county moved PSCC into the Pine Ridge Facility, where the operations staff remained until a new facility was opened in 2009, with Pine Ridge serving as an alternate backup center. The PSCC became an independent agency—the Fairfax County Department of Public Safety Communications (DPSC)—in

1. Department of Public Safety Communications, "About Us," Fairfax County Virginia, accessed July 30, 2024, <https://www.fairfaxcounty.gov/911/about-us>.

2. Department of Public Safety Communications, "A History of Public Safety Communications and 9-1-1," Fairfax County Virginia, accessed November 27, 2023, <https://www.fairfaxcounty.gov/911/history>.

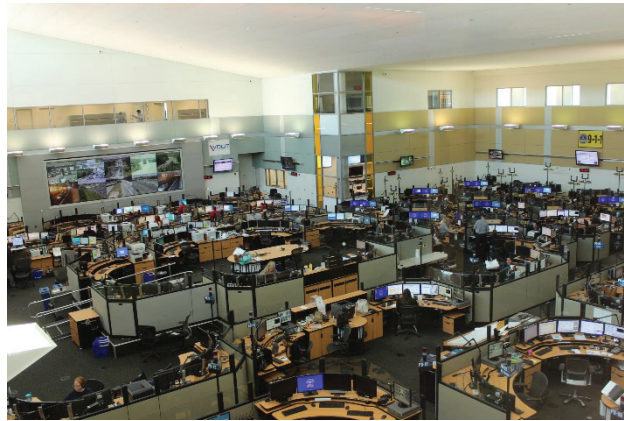
2005 and began to accept and dispatch both Fairfax County Police and Fire and Rescue calls, among others. The director of Fairfax County 911 is equal in rank to the county police and fire chiefs, and all public safety agency chiefs report to the Fairfax County Deputy Executive for Public Safety and Security.

The Fairfax County 911 center serves approximately 1.15 million county residents and an additional 225,000 workers who commute into the county each day. Fairfax County covers 411 square miles, and the call center moved to the current Public Safety and Transportation Operations Center in 2009. The call center receives more than a million 911 and nonemergency calls a year and dispatches responses for the Fairfax County Police Department, Fire and Rescue Department, Sheriff's Office, and fire and emergency medical services (EMS) responses required for the Virginia State Police (VSP) and Virginia Department of Transportation (VDOT). Fairfax County 911 manages its mission-critical technology systems, such as the computer-aided dispatch (CAD) system and Next Generation 911 (NG911, discussed in the next section) call handling, with vendor support. Fairfax County 911 also serves as a call center partner with the National Center for Missing and Exploited Children (NCMEC) and the 988 Suicide & Crisis Lifeline.

Next Generation 911

In 2020, recognizing that the Commonwealth of Virginia's former 911 system was outdated (based on decades-old technology initially meant for landlines),³ the Virginia 911 Services Board provided funding to move to a new set of technology for the Next Generation 911 (NG911) system.⁴ The transition to NG911 not only allows for improved technology and increased adaptability but also allows agencies to comply with standards set by state law.⁵

Fairfax County 911 led the region with the transition to NG911 technology. In June 2006, the agency had been the first in Virginia to migrate to the American National Standards Institute (ANSI) standard NENA i3 Next Generation Core Services (NGCS) routing platform using a solution from AT&T.⁶ The NGCS platform transformed the organization's base technology into a digital network that allows for a NG911 system that is more resilient to service interruptions and provides better service capabilities for serving the county's residents, such as providing an improved delivery of caller location data. For instance, the platform can more readily support failover capabilities to redistribute calls from neighboring PSAPs, enabling Fairfax County 911 to be more responsive to emergencies.



Fairfax County 911 call center floor, 2022

The NGCS platform and the current NG911 call handling system allows for remote call taking, as well as improved flexibility and resiliency to adapt in the event of natural disasters and power outages. Moreover, the geospatial routing capability used for 911 calls in the NGCS platform allows Fairfax County 911 to adjust its area of service to support the rerouting of calls from other jurisdictions should the need arise.

The 911 call center floor at the primary location contains 72 workstations for call takers and dispatchers. Currently, the call center is shared with VDOT and VSP. The call center contains a raised platform for Fairfax County 911 and partner agency supervisors. One section contains police dispatch, split by day and night pods allowing for a seamless

3. Virginia Department of Emergency Management, "Next Generation 911 Continues to be Deployed across the Commonwealth," press release, February 16, 2022, <https://www.vaemergency.gov/updates/next-generation-9-1-1-continues-to-be-deployed-across-the-commonwealth>.

4. Virginia Department of Emergency Management, "Next Generation 911 Continues to be Deployed" (see note 3).

5. Virginia 9-1-1 & Geospatial Services Bureau, "About Virginia's Next Generation 9-1-1 Dashboard," Virginia Department of Emergency Management, May 17, 2023, <https://storymaps.arcgis.com/stories/3f94d0b9a39c49dab500f9a2aa9ce042>; Code of Virginia § 56-484.16, Local emergency telecommunications requirements; text messages; use of digits "9-1-1" (2020), <https://law.lis.virginia.gov/vacode/title56/chapter15/section56-484.16/>.

6. Stacy Schwartz, "Fairfax County Completes First Deployment of Next Generation 9-1-1 to Enhance Public Safety," AT&T Blog, June 25, 2020, https://about.att.com/innovationblog/2020/06/fairfax_county_ng911.html.

transition during shift change. Fire and Rescue operations are located on another side of the call center. The call center also contains multiple redundant power generators and equipment so there is no single failure point during emergencies.

Fairfax County 911 has three levels of public safety communicators. The first level telecommunicators respond to calls for service and perform critical front-line decision-making and initial resource and emergency event classification, along with providing initial lifesaving first aid instructions (e.g., CPR, childbirth instructions). The second level of telecommunicators are responsible for ensuring constant communication and coordination with first responders in the field and assist in managing resources that are needed for incident commanders and first responders working those emergencies. Once dispatchers have experience in at least two types of calls, they become part of the third level, which allows them to handle the full range of incident resource management and dispatch for all call types. All call takers and dispatchers receive an initial 10 to 12 weeks of on-the-job training. Fairfax County 911's current training system mimics its current CAD system to better simulate call takers' experiences on the call center floor.

Fairfax County 911 uses several systems and features working in conjunction for call taking and dispatch. Their routing platform, in conjunction with a call handling system, runs in parallel with the agency's CAD system. The agency also uses Rapid SOS, an emergency response software platform that provides device-level location data to the call handling system for wireless calls, as well as other public safety data. Rapid SOS aggregates data from all 911 calls made from wireless devices and gives call takers device-level information to assist in obtaining accurate wireless call location.

The platform also integrates with other data providers. For example, the platform allows the public to create emergency health profiles that call takers can access in real time to direct the most appropriate response. Because of the accuracy of the location data, Fairfax County 911 has found the RapidSOS system to be particularly useful when receiving calls for lost individuals. With the additional data available, the improved mapping capabilities of the NG911 system provide nearly real-time device location information, which allows dispatchers to direct officers through difficult terrain areas to assist people. Similarly, Fairfax County 911 uses the RapidSOS electronic health profile, which allows individuals to disclose behavioral health conditions—important information for dispatched public safety resources. This capability—better known as the Marcus Alert⁷—was established as part of the Marcus-David Peters Act in Virginia, which created a legislative requirement to establish a voluntary database; Fairfax County 911 has found great success with the platform.

7. Fairfax-Falls Church Community Services Board, "What is Marcus Alert?" Fairfax County Virginia, accessed November 15, 2023, https://www.fairfaxcounty.gov/community-services-board/marcus_alert.

In addition, Fairfax County 911 has used the text-to-911 feature since 2015. While they receive a low text volume, the agency recognizes the potential for expansion of this service. Text messages can often transmit in areas that do not have cell phone coverage, and members of Fairfax County 911 noted that text-to-911 is a useful capability. Fairfax County 911 has enacted policies to address text-to-911 and has dedicated call takers to address texts. While this area of communication is still expanding, it has been helpful for individuals with hearing impairments. Similarly, NG911 technology recognizes and responds to several different languages, providing much faster communication than was previously available.

As a PSAP, Fairfax County 911 has an interface with alarm companies that allow for automatic calls with the push of a button rather than a phone call. Call takers do not have to speak with the alarm company and can instead automatically receive information from them, which has reduced call times by as much as three minutes. More recently, Fairfax County 911 has engaged in a trial period for remote call taking. Beginning November 2022, one call taker was deployed remotely, and the deployment has since expanded to three with agreement that these efforts have been largely successful. Remote call taking can be useful in extreme weather events as the call takers can respond to incoming calls from their homes. Issues that initially arose due to VPN and security concerns have been addressed, though remote call takers can only answer incoming calls and cannot dispatch with the current system because of VSP security requirements. After re-examining these efforts in the summer of 2023 when the last trial ended, Fairfax County 911 has suspended its remote call taking initiative pending transition to a new call handling system (CHS) in 2024. The original efforts were a proof of concept using off-the-shelf equipment; the agency met its goals in this endeavor and learned valuable lessons. While it succeeded in having three Public Safety Communicators working from home simultaneously, additional expansions would require the purchase of additional equipment. Fairfax County 911 will resume remote call taking efforts after the implementation of the new CHS.

The CAD2CAD⁸ dispatch software processes neighboring jurisdictions' calls by communicating with the different CAD systems of partner agencies in the region to reduce response times. Fairfax County 911 currently works with five jurisdictions and intends to add a sixth in 2024. Fairfax County 911 is configuring its technology to support mutual aid policies with partner agencies and the Metropolitan Washington Council of Governments. It also intends to switch to a more advanced CAD2CAD platform with additional features and functionality, such as allowing calls from other jurisdictions in the same queue as Fairfax County's to streamline interoperability. The CAD2CAD system has established a uniform way for PSAPs in the region to notify one another in the event of an outage.

8. Board of Supervisors Committee Meeting, "Next Generation 9-1-1 Update, October 9, 2018," Fairfax County Virginia, accessed November 27, 2023, <https://www.fairfaxcounty.gov/boardofsupervisors/sites/boardofsupervisors/files/assets/meeting-materials/2018/oct09-it-next-generation-911-presentation.pdf>.

Impact

NG911 technology has greatly enhanced Fairfax County 911's call-taking abilities. The improved location data available with NG911 provides more detailed information than would otherwise be available on cellular networks. The location data that call takers have access to can be used to pinpoint the location of an emergency call more accurately than the triangulation traditionally used with cell phone towers. The call taker can cross-reference the latitude and longitude available from the calling device; the estimated location is displayed on the call taker's map via geographic information system (GIS) data to accurately provide an address to first responders.

The data available through NG911 also allow firefighters to use What3Words⁹ location information. For example, the Fairfax County Fire and Rescue Department used What3Words information to find people in the Great Falls Park and Potomac River areas. As the Acting Director of the 911 Center explained,

"Typically, these park or water situations relate to an injured person who cannot move toward safety without assistance (e.g., leg injury from a fall). What3Words is a third-party worldwide grid that is accurate to within a three-meter square area. Each grid has a unique three-word combination, and it is passed into NG911 with almost every 911 call, and by plotting the three-word grid location, a first responder can be directed to a particular location even if that location is in the middle of a lake."

While location information may not be perfect, NG911 data used with third-party services has allowed Fairfax County 911 to provide accurate and timely responses to emergency requests. In one instance, NG911 allowed Fairfax County and VSP to locate an individual in distress inside the trunk of a moving vehicle. The Fairfax County 911 call taker responded to the original phone call that occurred on an interstate patrolled by VSP. After transferring the call to VSP, the call taker remained on the line with the agency and was able to watch for and relay almost real-time location updates on their map portal. This allowed the state troopers to locate the victim, and the offender was later arrested in a neighboring jurisdiction.

9. "What3Words," What3Words, accessed November 15, 2023, <https://what3words.com/about>.

Lessons Learned and Next Steps

Fairfax County 911's main challenge is the lack of adequate staffing in the communications center. However, Fairfax County 911 has taken steps to address the high call volume by using high-performing trainees. As many as 10 trainees receive additional training by supplementing the busiest shift at the call center, with five trainees currently being used. Fairfax County 911 is looking to expand its training academy with additional work stations for trainees.

In addition, Fairfax County 911 has noted that texts reach call takers differently than phone calls. Calls are received by the agency through an automatic distribution, but texts are received as data streams, which disrupt the sequential order of calls. As such, a dedicated call taker is in place to respond to incoming texts. As Fairfax County 911 continues to adopt newer systems, texts will begin to be received in sequence to the next available call taker. This change is expected to occur in 2024.

Conclusion

“A lot of NextGen is plumbing behind the walls as we transitioned. The impact to call takers is minimal. The transport mechanism for the ways the calls get to us has been greatly expanded.”

— Acting Director Ed Falcon

As a leader in the deployment of NG911, Fairfax County 911 has transformed how emergency services respond to 911 and nonemergency calls. Having observed the call center floor and training, the CNA team could clearly see that NG911 is a positive change for the agency. Despite the shifts in technology, call takers easily adapted and greatly improved their call taking capacity.

To support greater adoption of NG911, DPSC made its request for proposal public for other regions to use its vendors. They also provided the email for their main procurement liaison in Fairfax County for consultation with other agencies considering or in the process of developing NG911.

Improvements to the call center are still underway. While the Fairfax County 911’s primary location is running on the NG911 system, it is transitioning their secondary locations to a cloud-based system. This transition will increase call capacity. Looking forward, Fairfax County 911 intends to implement behavioral health liaisons as part of its public safety reform and its further work with Marcus Alerts. The agency has a pilot program in which clinicians are stationed at the agency to understand the crisis calls being received and triage calls that may be behavioral health-related.

There may never be an endpoint for 911 call taking and dispatch, given ever-changing technology. Fairfax County 911 has shown leadership in how to successfully respond to changes. CNA is confident that Fairfax County 911 will continue to be at the forefront of this vital service in the future.

About CNA

CNA is a not-for-profit organization based in Arlington, Virginia. The organization pioneered the field of operations research and analysis 70 years ago and today applies its efforts to a broad range of national security, defense, and public interest issues, including education, homeland security, public health, and criminal justice. CNA applies a multi-disciplinary, field-based approach to helping decision-makers develop sound policies, make better-informed decisions, and lead more effectively. CNA is one of the technical assistance providers for the U.S. Department of Justice's Office of Community Oriented Policing Services' Collaborative Reform Initiative for Technical Assistance.

For more information, visit CNA online at <https://www.cna.org>.

About the COPS Office

The **Office of Community Oriented Policing Services (COPS Office)** is the component of the U.S. Department of Justice responsible for advancing the practice of community policing by the nation's state, local, territorial, and tribal law enforcement agencies through information and grant resources.

Community policing begins with a commitment to building trust and mutual respect between police and communities. It supports public safety by encouraging all stakeholders to work together to address our nation's crime challenges. When law enforcement and communities collaborate, they more effectively address underlying issues, change negative behavioral patterns, and allocate resources.

Rather than simply responding to crime, community policing focuses on preventing it through strategic problem-solving approaches based on collaboration. The COPS Office awards grants to hire community policing officers and support the development and testing of innovative policing strategies. COPS Office funding also provides training and technical assistance to community members and local government leaders, as well as all levels of law enforcement.

Since 1994, the COPS Office has been appropriated more than \$20 billion to add community policing officers to the nation's streets, enhance crime fighting technology, support crime prevention initiatives, and provide training and technical assistance to help advance community policing. Other achievements include the following:

- To date, the COPS Office has funded the hiring of approximately 138,000 additional officers by more than 13,000 of the nation's 18,000 law enforcement agencies in both small and large jurisdictions.
- More than 800,000 law enforcement personnel, community members, and government leaders have been trained through COPS Office-funded training organizations and the COPS Training Portal.
- More than 1,000 agencies have received customized advice and peer-led technical assistance through the COPS Office Collaborative Reform Initiative Technical Assistance Center.
- To date, the COPS Office has distributed more than nine million topic-specific publications, training curricula, white papers, and resource CDs and flash drives.

The COPS Office also sponsors conferences, roundtables, and other forums focused on issues critical to law enforcement. COPS Office information resources, covering a wide range of community policing topics such as school and campus safety, violent crime, and officer safety and wellness, can be downloaded via the COPS Office's home page, <https://cops.usdoj.gov>.

In this series, CNA studies the use of emerging technologies by law enforcement agencies. The Fairfax County (Virginia) Department of Public Safety Communications, or Fairfax County 911, is a large communications center that assists in several types of law enforcement, medical, and fire dispatch services. Fairfax County 911 was an early adopter of Next Generation 911 (NG911) technology, which has expanded agencies' capabilities to handle mobile calls including location services, coordinate at a large scale across several emergency responders, and integrate data from other communication and dispatch technology. The NG911 adaptation has allowed Fairfax County 911 to respond to a high volume of calls and provide dispatch services to multiple organizations. This case study discusses how NG911 continues to aid deployment.



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