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California Legislature

INFORMATIONAL HEARING

ASSEMBLY COMMITTEE ON
COMMUNICATIONS AND CONVEYANCE
AND
JOINT LEGISLATIVE COMMITTEE ON EMERGENCY MANAGEMENT

Ready or Not: Emergency Communications Networks in the Face of Wildfires, Mudslides, and Public Safety Threats

Wednesday, March 7, 2018
1:30 p.m.
State Capitol, Room 4202

Background Paper

Introduction

The 2017 wildfire season was named one of the state's worst fire seasons and has dramatically impacted communities at unprecedented levels. This led the California State Legislature to convene a series of joint hearings between the Assembly Committee on Communications and Conveyance, and the Joint Legislative Committee on Emergency Management, to examine the variety of emergency alert systems in California, as well as the communications networks used by first responders during a disaster.

The goal of the hearings is to better assist the Legislature in understand how emergency systems work together, and identify areas for improvement, to ensure that communities are able to react quickly during an emergency, and that first responders are equipped with the tools necessary to protect public safety. The first hearing was convened in the

State Capitol, on December 4, 2017, and focused on emergency warning systems in California. The second hearing will focus on emergency communications networks.

2017 Southern California Wildfires & 2018 Montecito Mudslide

As the first hearing concluded, and even before the second hearing could convene, large wildfires began spreading throughout Southern California. By Thursday, December 7, 2017, approximately 116,000 acres had been scorched, more than 300 homes, business and other buildings were destroyed, and nearly 200,000 people were forced to evacuate their homes. For a period of time the 101 and 405 freeways were forced to close and Los Angeles County officials sent out countywide wireless emergency alert warning residents of dangerous fire conditions ahead. The Thomas Fire in Ventura County itself lasted for 40 days, burning 280,000 acres, destroyed more than 1,000 buildings, and claiming two lives, in what became the largest wildfire in California history.

In early January 2018, heavy rains pounded Santa Barbara County. At one point, the area recorded a half inch of rain in just five minutes. At approximately 3:30am on Tuesday, January 9, 2018, debris from the 440 square mile burn scar left by the Thomas Fire caused a mudslide busting out of the foothills behind the community of Montecito towards the ocean. The resulting mudslide swept away cars, leveled homes, and buried the 101 freeway, resulting in the death of 21 Montecito residents with two still missing.

California's fire season normally peaks in October, but as the 2017 wildfire season has showed the combination of strong Santa Ana winds, low humidity, and climate change led Governor Jerry Brown to state that such wildfires maybe the new normal in years to come. Surely, the effectiveness of our emergency response will be more critical as the frequency of such events continue to increase.

9/11 and Interoperability

Unfortunately, California is no stranger to disasters and emergencies. From wildfires and earthquakes, to flooding and terrorism, California public safety officials must be ready to confront a variety of emergency situations. Perhaps no event more dramatically demonstrated the failures of our first responder's communications network then 9/11, when the inability of police and firefighters to talk to each other in a crisis shocked and horrified the nation. Different communication channels used by first

responders to share information during 9/11 resulted in confusion and delays in rescue operations and coordination.

The ability for first responders to communicate with each other, along with other officials and the public at-large during an emergency is critical to the successful management of a disaster. Instead, overcrowding on radio channels, along with weak radio signals, made communication unintelligible and contributed to the difficulties experienced by first responders during 9/11 when multiple agencies across multiple jurisdictions responded to three very different incidents simultaneously.

In the wake of 9/11 a goal was identified, and a buzzword was born: Interoperability. Interoperability in an emergency management sense is the ability for multiple systems to work in conjunction with each other during an emergency. This includes not just a convergence of communication networks and technology, but the establishment of a culture of coordinated communications across jurisdictions, geographies and leadership mentalities, which includes a unified language and changes to organizational structure, leadership, mentality, and 'rank and file' personnel training, to ensure an effective emergency communications interoperability.

Interoperability includes the acknowledgment that emergencies and disasters are best managed cooperatively, and not in a "siloed" manner. After 9/11 governments across the country began the task of establishing the infrastructure and networks needed to allow diverse emergency respond jurisdictions to communicate with one another seamlessly during an emergency.

The First Responder Network Authority (FirstNet)

Following 9/11, the 9/11 Commission Report included recommendations to establish a national, interoperable public safety network. In February 2012, the structure and funding mechanism for such a network was created when President Obama signed the Middle Class Tax Relief and Job Creation Act of 2012 (The Act).

Spectrum is the radio frequency in which all wireless communications signals travel over the air. Public safety radio systems typically operate in portions of the 800 Megahertz (MHz) band spectrum. However, depending on the type of frequency, such spectrum bands may also be used by commercial wireless carriers and private radio systems. This creates a problem for first responders using the 800 MHz band spectrum because during an emergency, overcrowding of the communications networks used by

public safety personnel along with the public creates harmful interference, making communications unintelligible or impossible.

The Act created FirstNet as an independent authority within the National Telecommunications and Information Administration (NTIA), to develop and manage the network. According to FirstNet, the public safety network will:

- Improve communications through an interoperable network;
- Connect responders in rural America;
- Enhance situational awareness in emergencies;
- Give public safety a true priority;
- Offer vital capacity for planned events, large crowds;
- Deliver actionable data via innovative apps, devices;
- Provide reliability and security when disaster strikes;
- Ensure coordinated response to man-made disasters;
- Drive innovation in life-saving, public safety communications technology; and,
- Serve as the network first responders need to keep communities safe.

The Act reallocated the 700 MHz D Block spectrum to public safety and authorized $7 billion to build the network, funded through the Federal Communications Commission (FCC) spectrum auctions through 2022. The Act required FirstNet to deliver a plan to each state that includes FirstNet's strategy for build-out, and required the Governors of each State to opt-in or opt-out of the network. If a state chooses to opt-out of the FirstNet network, it can submit its own plan for approval.

In March 2017, FirstNet awarded a 25-year contract to AT&T to build and manage the network. Whether a state opts-in or opts-out of FirstNet, local public safety agencies may still choose to contract with a different provider.

FirstNet and California

In California, the Governor's Office of Emergency Services (Cal OES) leads the California First Responder Network (Cal FRN) efforts. The Cal FRN Board of Directors

provides the governance structure for activities in California and works closely with the FirstNet authority. Cal OES receives funding for FirstNet related activities from the federal State and Local implementation Grant Program (SLIGP). As part of the Act, the NTIA was authorized to provide such grants to states to enable them to prepare for FirstNet. In August 2013, California received $5.6 million in SLIGP funding. Beginning in 2013, Cal OES began holding town halls to collect comments and information to help inform FirstNet and AT&T on potential issues and priorities for California in its pending FirstNet decision.

In July 2017, a United States Senate Commerce, Science, and Transportation Committee hearing raised several questions regarding the implication of the FirstNet network, including:

- Rural Coverage - in the event that coverage is unsuitable, how will states hold FirstNet and AT&T accountable for delivering the terms of the contract, including the rural components?
- Deployable - are they effective when there is no other coverage or when it is not possible to get them close enough?
- Network Resiliency and Cybersecurity - will the network be "public safety grade" and will the separate encrypted core network/security operation center be cyber secure?
- Comparability – how do states compare and evaluate FirstNet plans with alternative state plans if they cannot share the information in the FirstNet plan?
- Tribal Consultation and Outreach – How can FirstNet improve relations with tribes by better connecting key decision makers with individuals with first-hand knowledge of tribal experiences?
- Assessment of Long-Term Staffing Needs – For effective contract oversight, FirstNet will need to plan for and assign adequate resources to ensure completion of the contract.

Furthermore, California also identified additional challenges and opportunities including:

- Process and funding for cybersecurity assessment, remediation, and certification of all existing networks prior to connecting to FirstNet, and from these networks to FirstNet core gateways;

- Integration of Next Generation 9-1-1 with FirstNet Network;
- Development of policies and procedures for determining priority of users, public safety and non-public safety;
- Development of policies and procedures for local control of California portion of the network;
- Process and compensation for local public safety network infrastructure assets used;
- Process and funding for California (or third party) verification of FirstNet network performance;
- Process, representation of, and responsibilities of all entities party to the contract user equipment, including handsets and deployable;
- Policy and process for local mobile app development; and
- Policy and process for data ownership.

States, such as California, who have made some progress in the development of regional interoperable systems, will face difficult time-sensitive questions about whether to allow FirstNet to build and operate the network on their behalf, or opt-out and build and operate their own portion of the national network while adhering to the federal standards set by FirstNet.

In September 2017, FirstNet delivered its final state plan to California. On December 28, 2017, California decided to opt-in to FirstNet. All 50 states, five U.S. territories and Washington D.C. also have decided to opt-in.

In his letter to FirstNet Governor Brown stated that, "While California remains concerned that the proposed plan does not address all our State's needs, California is opting into the plan with the expectation that our concerns will be addressed throughout our partnership." Cal OES Director Mark Ghilarducci was more direct in his letter, stating that "California is electing to opt-in to the FirstNet State Plan, in part, because FirstNet's regulatory and procedural process makes the opt-out option in California untenable."

Although FirstNet and AT&T have been able to address some of the issues raised by the State, there are still a number of remaining issues in which California expects additional progress on, including:

- Interoperability: Due to coverage gaps throughout California, FirstNet deployment will require a multiyear process that will depend on a variety of other carriers to support its mobile data needs. To be successful, FirstNet will need to require all applications to be interoperable across all systems and carriers.

- Security: AT&T core network is not presently Criminal Justice Information Services (CJIS) and California Law Enforcement Telecommunications System (CLETS) compliant. AT&T should provide the NetMotion solution at no charge to all CLETS and CJIS subscribers until it obtains CLETS and CJIS certification of the FirstNet Core through the Department of Justice.

- Site Hardening: Site hardening should include backup power and redundant backhaul connections. This includes a commitment by AT&T to backup microwave connection sites, provide seven days of generator backup for all sites, provide eight hours of battery backup for all sites, and quarterly inspections to ensure adequate defensible space is established and maintained for all sites.

Because of California's topography and diverse mutual aid requirements, success will depend on FirstNet and AT&T's ability to work with California to deliver a mission critical data network that is reliable, interoperable with other carriers' networks, redundant, and resilient to become a primary means of communications over time.

Los Angeles Regional Interoperable Communications Systems (LA-RICS)

With over 10 million County residents, the need for emergency communications interoperability is especially critical in the Los Angeles region. LA-RICS was established in 2009 as a joint powers authority to develop a interoperable public safety communications network to meet Los Angeles County's emergency communication needs. LA-RICS received $154.6 million in federal funds to build and operate a public safety network, which will replace many of Los Angeles County's existing systems with networks dedicated solely for public agencies and first responders.

The initial plan for LA-RICS was to construct 176 new wireless sites and use 114 existing sites to replace 40 aging systems used by public agencies across 88 cities and unincorporated areas in Los Angeles County. In March 2013, Motorola won a multi-year $280 million contract to design, construct, implement and maintain the LA-RICS network. However, due to a series of disputes and the withdrawing of cities wishing to

participate, in April 2015, the NTIA suspended funding for LA-RICS. LA-RICS submitted a corrective action plan to the NTIA reducing the number of cell sites, and funding was subsequently restored.

Today, LA-RICS' membership consist of Los Angeles County and 23 municipalities within the county. It has reduced its broadband site to 63 fixed towers and 15 mobile units. Expected to be completed in 2020, LA-RICS will be the largest public safety broadband network in the United States until FirstNet is expected to be largely deployed nationwide by 2022. When FirstNet was designated as the nationwide public safety network, LA-RICS continued to lease spectrum from FirstNet, and will eventually be incorporated into the large nationwide public safety broadband network.

Bay Area Regional Interoperable Communications System (BayRICS)

The San Francisco Bay-Area is a dynamic and diverse region demanding a unique solution for public safety interoperability. BayRICS was established in 2011 to oversee the development of the Bay Area Wireless Enhanced Broadband (BayWEB) project and other regional public safety communications projects. BayRICS is a joint powers authority whose members include representatives for the counties of Alameda, Contra Costa, Marin, San Francisco, San Mateo, Santa Clara and Sonoma, and the cities of Oakland, San Francisco and San Jose, as well as hub cities in the East Bay and South Bay. BayRICS was funded through a $50.9 million federal grant and $21.9 million in matching funds by Motorola to build a 193-site network for public safety broadband use by August 2013.

With the designation of FirstNet as the nationwide public safety network, in May 2012, the NTIA suspended grants for certain public safety projects, including BayWEB. The suspension allowed the NTIA to evaluate all public safety projects to ensure that they would proceed in a manner that supports the nationwide deployment of a unified public safety network. As a result, the NTIA required grant recipients to obtain a spectrum lease from FirstNet in order to continue their project deployment. However, unlike LA-RICS, BayRICS failed to demonstrate that it had substantial network deployment necessary in facilitating in the transition to FirstNet. After months of negations, FirstNet announced in December 2013 that it was unable to reach an agreement with BayRICS and Motorola on the terms of the spectrum lease.

Following the termination of BayWEB, an ad hoc planning committee was formed in January 2014 to develop recommendations and establish a strategic plan for BayRICS

moving forward. The BayRICS board decided to refocus its efforts on short-term regional communications initiatives as well as monitoring the progress of FirstNet and ensuring that its members were informed on the status and timeline of network deployment, developing policies and procedures for regional governance, and providing recommendations to members regarding the adoption and usage of FirstNet services.

Next Generation 9-1-1 (NG911) and California's Broadband Infrastructure

California has one of the nation's largest 911 system with over 443 call centers to handle its 911 calls. California's 911 system was built in the 1970s on an infrastructure of analog, circuit-switched network technology known as Public Safety Answering Points (PSAPs) which is designed mostly to support voice and limited data services. PSAPs were not equipped to support text messages, video feeds or photos. Wireless 911 calls are generally routed to the California Highway Patrol where callers are queried and then transferred to a local dispatch center. This can result in delays of emergency medical services and in many cases the inability to identify a caller's exact location.

As more Californians move away from legacy telecommunications systems (e.g. landlines) to more Internet Protocol (IP) based systems (e.g. wireless & Voice over Internet Protocol), ensuring that residents have access to reliable IP based networks for personal and commercial purposes, will further supplement a statewide communications network that enhances the states emergency communications network capabilities. Building an IP based system will require a substantial amount of new funding or changes to the existing surcharge model.

NG911 is the next generation of 911 systems with the promise of replacing the current 911 system with an IP based network. The development of NG911 helps strengthens system resiliency and reliability by providing more accurate location data and enable real time transmission of emergency voice, text, data, photos, and videos between 911 callers and PSAPs. California's 911 program costs are funded through a surcharge on intrastate telecommunications services. The surcharge rate is determined by Cal OES on an annual basis. Currently, it costs approximately $104 million annually to maintain the States existing 911 network. Once NG911 is fully deployed, California could spend an additional $33 million more per year on its 911 efforts.

In addition, the California Public Utilities Commission implements the California Advanced Services Fund (CASF) which provides funding for the deployment of

broadband infrastructure to residential and business properties. The CASF is also funded through a surcharge on intrastate telecommunications services.

NG911 and FirstNet are two separate systems representing the nation's future emergency response capabilities. While NG911 transitions the States legacy 911 system to a digital, IP-based system, FirstNet seeks to create a National Public Safety Broadband Network that will connect first responders with one another. The coordination of these efforts combined with the expansion of reliable IP based networks throughout the state is essential to fostering a seamless emergency communication system that can transmit critical information from the public to emergency responders, as well as between emergency responders themselves..

Conclusion

California has faced its share of disasters. The events in October and December of 2017 were not the first, nor will they be the last, emergency incidents the State will encounter. 9/11 forced the idea of interoperability into the minds of the public. Fortunately for California, it has managed to avoid the type of catastrophic large-scale disasters seen in New York, Washington D.C., and Louisiana over the past decade.

As any emergency manger would say, it is not a matter of being prepared "if" disaster strikes - but "when." While FirstNet may represent a commitment by governments towards the goal of public safety interoperability, it is imperative that it continues to strive for improvements in the areas of emergency communications with a keen eye towards enhanced public safety and emergency management when disasters occur. Doing so requires a multifaceted approach which includes the development of a public safety broadband network, along with the operational, leadership, and organizational changes that will be needed across the entire public safety spectrum.