NIMS Standards Case Study:
Emergency Dispatch in Alameda County, CA

National Preparedness Directorate

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Consolidating Emergency Dispatch to Enhance Regional Response

Emergency calls stream into a regional emergency communications center, where dispatchers process calls for five response jurisdictions. These dispatchers utilize a computer aided dispatch (CAD) system that automatically identifies the appropriate response agency once a caller's location is recorded. At the same time, the dispatchers track the status of 100 first-out units in a center that has been recently remodeled to accommodate a regional operation. Operating from this regional center, dispatchers are able to more effectively track the distribution of response units and effectively dispatch available resources to meet ongoing emergency response needs.

The situation described above represents standard operations for the Alameda County Regional Emergency Communications Center (ACRECC), a regional emergency dispatch center in northern California. In designing the ACRECC and tracking its performance, the center's management uses the **National Fire Protection Association (NFPA) 1221: Standard for Installation, Maintenance, and Use of Emergency Services Communications Systems** as a tool to assist in the operation of a consolidated dispatch center.

ABOUT THIS CASE STUDY

While NIMS provides a common structure and terminology for responding to incidents and planned events, voluntary consensus standards support NIMS implementation by creating uniformity of use and practice. Such support is particularly important for interoperable communications and integrated information management systems. Standards also provide:

- Accepted and uniform criteria for measuring the adequacy of preparedness efforts and performance of emergency operations;
- Technical guidance; and
- Common resource descriptions to facilitate mutual aid—the sharing of resources among jurisdictions.

The National Preparedness Directorate (NPD), Federal Emergency Management Agency (FEMA) and the NIMS Support Center (NIMS SC) work in partnership with standards development organizations (SDOs) to identify existing industry standards that support NIMS implementation. These select standards are placed on the NIMS Recommended Standards List (RSL) and posted on the FEMA website for public access.

This article highlights an application of the NFPA 1221 standard in Alameda County, California. The NFPA 1221 standard covers the installation, performance, operation, and maintenance of public emergency services communications systems and facilities. It is not intended as a design specification or instruction manual; rather, it provides guidance for constructing communication infrastructure and performance monitoring. The standard covers systems that receive alerts from the public (e.g., 9-1-1 services systems and communications centers) and retransmit those alerts to response agencies. It also provides requirements for dispatching systems and the quality of installations and establishes a level of performance and the quality of installations for emergency communication systems. Elements of these systems may include communications centers, signal wiring, emergency response facilities, operations centers, telephones, dispatching systems, CAD, and public alerting systems. Other operations covered under this standard include system testing, record keeping, and network security.

The NFPA 1221 supports the NIMS requirements for interoperability; reliability, scalability, and portability; and resilience and redundancy among communications systems. The standard establishes a benchmark for communication equipment installation, maintenance, and testing/use, which are critical to ensure that communications remain in place for emergency management/response personnel and to mitigate the chance of disruptions during an incident. Additionally, NFPA also supports the multiagency coordination systems (MACS) component of NIMS. Integral elements of MACS are dispatch procedures and protocols, incident command structure, and the coordination and support activities taking place within an activated EOC.

Additionally, NFPA 1221 supports the components of an interoperability plan by requiring that emergency services organizations develop policies and standard operating procedures for use of communications equipment. The standard ensures that communications equipment is properly functioning. Practicing preventive maintenance, as called for in the standard, helps emergency management/response organizations avoid high replacement costs for communications equipment.

OVERVIEW OF ALAMEDA COUNTY REGIONAL EMERGENCY COMMUNICATIONS CENTER

Like many jurisdictions in California, Alameda County has experienced major incidents which stretched the response capabilities of any single organization within the county. One such example was the 1991 Oakland Hills Firestorm, also known as the Tunnel Fire, which scorched 1,520 acres in northern Oakland and southeastern Berkley, destroying 2,843 homes and 433 apartments and resulting in an estimated $1.5 billion economic loss.[1] The scope of this fire highlighted the need to more closely integrate regional response efforts and provided an early impetus towards regionalizing fire and emergency medical dispatch centers. Additionally, the recent shift to the extensive use of wireless communications makes it difficult to determine where an emergency call is originating; therefore, calls may be misrouted, resulting in delays in rendering aid. As a result, response agencies in Alameda County have committed to eliminating this lag through agreements and support funds to consolidate emergency dispatch centers.

The ACRECC was created in 2002 with the consolidation of the Alameda County, Alameda City, and Lawrence Livermore National Laboratory (LLNL) fire department dispatch centers into a single emergency communications center based at LLNL. The Alameda County Fire Department also provides response services for Lawrence Berkley and Sandia National Laboratories. These agencies were identified for consolidation by a regional study which determined that consolidated dispatching operations would allow these agencies to more effectively provide emergency response services to their respective jurisdictions. In 2003, ACRECC assumed dispatch responsibilities for the Camp Parks Reserve Force Training Area, a Department of Defense facility that operates a fire department. Similarly, in 2004, the fire dispatch operations for the City of Fremont and Union City were moved to ACRECC. All departments served by ACRECC are parties to a mutual aid agreement. The ACRECC processes emergency calls for regional fire and emergency medical service departments; no law enforcement dispatch occurs through this center. Additionally, ACRECC hopes to expand its operations to include dispatch for advanced life support (ALS) ambulances operated by private contractors working under agreement with local cities.

To meet its consolidated dispatch responsibilities, the ACRECC was expanded and remodeled in 2004. The NFPA 1221 standard served as the guideline for the design and construction of the upgraded emergency communications center. The standard specifies construction requirements in areas such as heating, ventilation, and air conditioning (HVAC) installation; use of fire detection systems; and signal wiring. It also incorporates additional NFPA building design and construction standards into its requirements. Chuck Berdan, the ACRECC dispatch manager, noted the benefit of this standard: “As people go through and remodel, they have something to hold up to show to architects and government officials.” This allows responders to provide the architects with specific design guidelines and to provide elected officials making budget decisions with a justification for design costs.

NFPA 1221 Alarm and Emergency Call Processing Requirements

ALARMS	
Answered within 15 seconds	95%
Answered within 40 seconds	99%
Emergency Calls	
Answered and dispatched within 60 seconds	95%
Answered and dispatched within 90 seconds	99%

The service area for agencies dispatched by ACRECC spans 821 square miles and includes a population of over 600,000 people. On average, the center processes approximately 60,000 alarms and 120,000 calls per year. To meet these requirements, the ACRECC employs a staff of 20 dispatchers and 4 supervisors, with 5 dispatchers operating during day shifts and 4 during night shifts. There are two radio dispatchers operating on each shift. One dispatcher has responsibility for Fremont, Union City, and Alameda City. The other dispatcher is responsible for Alameda County, the Camp Parks Reserve Force Training Area, LLNL, Lawrence Berkley National Laboratory, and Sandia National Laboratory, while the remainder of the staff on duty is responsible for call taking. The ACRECC utilizes a CAD system that automatically identifies the responsible

jurisdiction once a caller's information has been entered, helping to streamline dispatch of the appropriate agency's response units.

For ACRECC, NFPA 1221 serves not only as a design specification but also as a performance management tool. In addition to defining standards for emergency communications center design, NFPA 1221 also specifies the time in which alarms and calls must be answered and units dispatched. The 2007 edition requires 95 percent of alarms to be answered within 15 seconds and 99 percent to be answered within 40 seconds. Similarly, the standard requires 95 percent of emergency call processing and dispatch to be completed within 60 seconds, and 99 percent to be completed within 90 seconds.[2] Chuck Berdan has integrated the standard's call answering and dispatch time requirements into his monthly reviews of ACRECC performance, comparing the center's dispatch times to the standard. While the ACRECC currently answers 90-95 percent of calls within three seconds, NFPA 1221 provides a performance baseline for Berdan: "If our performance were to fall below 90 percent, then I would know something's wrong and that I don't have enough people answering the phones at the right time."

> "Performance standards serve as a measure of: do I have enough people?"
>
> – Chuck Berdan, Dispatch Manager, ACRECC

CONCLUSION

Since its creation in 2002, the ACRECC has successfully integrated dispatch responsibilities for a range of Federal, State, and local response organizations, including national laboratories and a Department of Defense training facility. Although fiscal issues played some role in jurisdictions bringing their dispatching operations under the ACRECC's umbrella, ACRECC's expansion has largely been driven by a regional desire to enhance cooperation and reduce the time lag between the receipt of an emergency call and the arrival of response units. The NFPA 1221 standard provided the design guidelines utilized during the center's redesign in 2004 and continues to be used as a performance measurement tool by the center's dispatch manager.

RESOURCES

National Incident Management System (NIMS) Standards
http://www.fema.gov/emergency/nims/nims_standards.shtm

National Fire Protection Association (NFPA) 1221: Standard for Installation, Maintenance, and Use of Emergency Services Communications Systems
http://www.nfpa.org/aboutthecodes/AboutTheCodes.asp?DocNum=1221

REFERENCES

NIMS SC staff obtained information for this case study through interviews with key personnel from the respective case study locations, as well as online research. Unless otherwise cited, all information presented in this study is drawn from these interviews.

1 "The Fire and Human Impact."
http://www.csulb.edu/~djeffrey/hazards/human_impact.html Accessed August 27, 2008.

2 National Fire Protection Association. "NFPA 1221: Standard for the Installation, Maintenance, and Use of Emergency Services Communications Systems." 2007.