
9-1-1 Dispatching

A Best Practices Review

SUMMARY

This is a review of 9-1-1 public safety dispatching in Minnesota. By law, counties in Minnesota have been responsible for establishing 9-1-1 emergency telephone systems, either individually or jointly with other counties. The public employees who take the calls and dispatch the appropriate emergency response agencies have different titles around the state to reflect their varying duties, but in this report we refer to all of them as dispatchers.

Dispatchers process 9-1-1 calls as well as other emergency calls made to local law enforcement and fire departments that come to public safety answering points (PSAPs) through seven-digit telephone numbers. They also receive many calls that are not true emergencies but may require a public safety response, a transfer to another agency, or simply information. In dealing with emergencies, dispatchers must process calls quickly and accurately, and are usually required to perform several tasks simultaneously under pressure. Calls to PSAPs in Minnesota are answered on the average within five seconds of the first audible ring, according to our survey of PSAPs statewide.

In addition to answering calls, dispatchers serve as a vital communication link with police, fire, sheriff, ambulance, and other public safety units in the field. Dispatchers are generally considered to be as much a part of effective public safety as law enforcement officers on the street. In

some PSAPs, dispatchers also provide emergency medical instructions to callers in advance of the arrival of medically trained personnel. Many dispatchers around the state also perform other functions, such as jailer, record keeping, or receptionist duties.

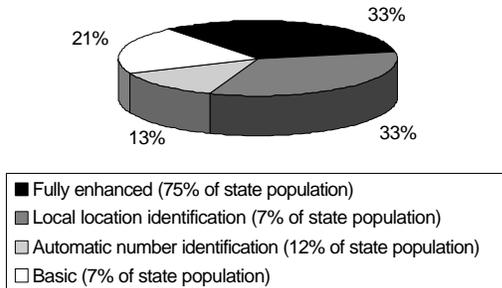
9-1-1 DISPATCHING IN MINNESOTA

Although residents everywhere across the state can dial 9-1-1 for access to emergency services, the level of service varies. In 1997, 29 counties had “fully enhanced” 9-1-1 service, meaning the telephone company forwards to the PSAP the 9-1-1 caller’s telephone number and address. With this information, the dispatcher can send help even when callers are injured or panicked; dispatchers are also able to call back when a caller is disconnected. Another 29 counties had “local location identification,” where the telephone company forwards the telephone number, but the PSAP’s own database supplies location or address information. In 11 counties, only the telephone number was automatically forwarded. Together, these 69 counties with some form of enhanced 9-1-1 represented about 93 percent of the state’s population.

The remaining 18 counties, with about 7 percent of Minnesota’s population, had basic 9-1-1 service in 1997, whereby 9-1-1 callers are connected to the PSAP but the dispatcher receives no information to locate the callers or call them back.

This review focuses on effective and efficient actions to help public safety answering points meet their goals.

Minnesota Counties by Level of 9-1-1 Service, 1997



SOURCES: Department of Administration, *Minnesota 911 Program*, January 5, 1998; Minnesota Planning, *1996 Population and Household Estimates*.

The state and local governments share in financing 9-1-1 services. Minnesota collects a telephone user fee, currently totaling 22 cents per telephone line per month. In fiscal year 1997, the state collected about \$7.6 million in user fee receipts, part of which pays telephone company costs for providing 9-1-1 service and part of which helps PSAPs upgrade to fully enhanced 9-1-1 systems. Local governments, however, have paid for most of the substantial costs of purchasing or leasing 9-1-1 equipment, developing local databases, and employing dispatchers.

9-1-1 calls made with cellular and other wireless telephones are handled differently. Currently, all wireless 9-1-1 calls are received at 1 of 10 State Patrol communications centers around Minnesota; the caller's number and location, however, are not available to the dispatcher. Recent orders by the Federal Communications Commission require wireless telephone providers by April 1, 1998 to begin forwarding the wireless telephone number and the "cell site" from where the call is made.

The 1997 Legislature passed a law that may alter the responsibility for wireless 9-1-1 calls; some law enforcement officials would rather receive these calls at their PSAP instead of having calls transferred to them by the State Patrol. In our view, some of the key factors for determining the responsibility for wireless 9-1-1 calls appear to be: (1) the share of calls originating in areas where the State Patrol has jurisdiction versus where local PSAPs have primary jurisdiction, (2) the extent to

which current wireless 9-1-1 calls are being transferred to local PSAPs, and (3) the operational and financial capabilities of the local PSAPs to handle wireless 9-1-1 calls.

Local Government Structure for Providing 9-1-1

Minnesota has 112 local public safety answering points. Of the 87 counties, 78 operate a single public safety answering point; one county operates two. In the remaining eight counties, the county operates a PSAP and other local governments within the county operate separate PSAPs.

Over time the number of PSAPs in Minnesota has decreased as local governments consolidated their operations. Several sheriff offices have merged their dispatching with that of local police departments; some cities that formerly ran their own PSAP have since merged operations with those in nearby cities or the county.

Purpose of This Best Practices Review

This report identifies some of the effective and efficient practices related to 9-1-1 dispatching in Minnesota. It is based on a statewide study of current practices in the state's 112 public safety answering points and 10 State Patrol communications centers.

The purpose of this report is to catalog effective methods, demonstrate the conditions under which they appear successful, and encourage their adoption wherever appropriate around the state. Unlike a regular audit or evaluation, this report does not focus on deficiencies, but highlights successful practices.

We hope that Minnesota's local governments will actively use this report to examine their own practices and consider the ideas presented here that contribute to effective and efficient 9-1-1 dispatching elsewhere.

This best practices review is part of a program created by the Minnesota Legislature in 1994 to identify best practices in local government service delivery.

We compared the effectiveness and efficiency of cities operating their own PSAP with that of their counties' PSAP, using numerous measures such as the average time to answer a call, the completeness of telephone equipment, and access to emergency medical dispatching. Comparing these measures we found that in some cases, the city-operated PSAP offered higher quality or more services than its county PSAP. Even though residents of those cities pay twice for 9-1-1 services—once for their own PSAP and a second time for the county's—they receive better service than they would using the county PSAP. On the other hand, in some counties with multiple PSAPs, the county PSAP operated more effectively and efficiently than the city PSAPs. Particularly in these cases, consolidated dispatching may yield better service and lower overall costs.

We expect that future consolidations of PSAPs will be driven by opportunities to improve service through upgraded technology and equipment, reduce redundant functions, and save money. In the seven-county Twin Cities metropolitan area, the planning now underway for a digital, 800 megahertz “trunked” radio system may also be a factor. Although planned as a regionwide public safety radio system, some local governments are questioning the high costs of purchasing the digital equipment needed to participate. Through consolidating PSAPs or joint purchases of equipment, some local governments may see avenues for either (1) affording participation in the regionwide system or (2) operating radio equipment outside the regionwide system (but without the intercounty communication the regional system promises) for the medium-term future by using existing radio channels or applying for channels that have been “turned back.”

Training for Dispatchers

Because of the vital nature of dispatchers' jobs, the communication links they provide with emergency response agencies, and the increasing technological complexity of public safety communications, dispatchers need comprehensive initial and ongoing training. Although Minnesota has not set minimum skill or training standards for dispatchers, we found that Minnesota PSAPs generally have a strong emphasis on dispatcher training. In 1996, at least

two-thirds of PSAPs met or exceeded the minimum training guidelines in most subject areas recommended by a national organization of public safety telecommunicators. According to our survey results, PSAPs that met or exceeded all of these training minimums were more likely than others to have numerous characteristics of effective dispatching organizations.

An issue currently pending before the Minnesota Legislature would make dispatchers “essential” employees, thus prohibiting them from striking. Proponents of the legislation argue that highly skilled dispatchers could not be easily replaced during a strike without jeopardizing public safety. Opponents are concerned about the higher costs for dispatcher salaries that the essential designation may generate and dislike the inflexibility of binding arbitration to settle labor and management disputes.

Data were not available to allow us to compare dispatching effectiveness in states that allow dispatchers to strike with states that do not. With the data available we looked at a sample of states to see whether there was a connection between training, as a proxy for quality dispatching, and employees' opportunity to strike. The states we analyzed showed mixed results and we did not find a clear link between quality dispatching, as defined by high levels of training or statewide training requirements, and prohibiting strikes. We can conclude, however, that regardless of whether dispatchers become essential employees, high quality dispatching requires regular and comprehensive training.

GOALS, ACTIONS, AND BEST PRACTICES IN 9-1-1 DISPATCHING

Based on state statutes and professional standards, we identified two goals for effective and efficient 9-1-1 public safety dispatching.

The goals are:

- **To provide 24-hour per day availability for receiving 9-1-1 and other public safety calls and either (a) dispatching law enforcement, fire protection, and emergency medical and ambulance**

services as needed or (b) transferring calls to the appropriate public agencies.

- **To provide an effective and efficient system that processes incoming calls and, as necessary, dispatches response units in an accurate and speedy manner.**

We identified seven actions that we believe will help PSAPs reach these goals. They are not the only actions that affect PSAPs' performance, but they are based on ideas and standards from the public safety communications industry and are applicable to all PSAPs.

Seven Actions for Public Safety Answering Points

1. Develop and use standard operating procedures.
2. Support a trained and qualified work force.
3. Maintain adequate communications and network equipment.
4. Consider opportunities for coordinating the use of dispatching equipment and for cooperative dispatching.
5. Keep records and measure performance.
6. Promote information exchanges among public safety response agencies.
7. Educate the public on the 9-1-1 system and services.

We used the goals and actions as a framework to identify best practices in 9-1-1 dispatching. In the text that follows, we describe the seven actions and provide examples of how some Minnesota PSAPs have implemented them in actual practice.

1. Develop and Use Standard Operating Procedures

PSAPs need to establish and follow guidelines that standardize effective practices in: receiving and processing calls, dispatching the appropriate response agency, communicating with response units, resolving complaints, and managing

unanticipated malfunctions in the 9-1-1 equipment. This includes developing and testing written disaster recovery plans that specify what steps to take if the 9-1-1 system or another component of the PSAP's operation becomes inoperative for any reason. Our survey of Minnesota PSAPs indicated that about 78 percent of them had written standard operating procedures for some dispatching functions in 1996.

Scott County

In Scott County, the PSAP provides emergency medical dispatching through a private ambulance service. When dispatchers receive a medical call, they transfer it to the ambulance service. Trained emergency medical dispatchers at the company dispatch ambulances and offer medical instructions to the caller in advance of the ambulance's arrival.

This allows Scott County dispatchers to focus their attention on assisting field units and handling other emergency calls. It also avoids the county expense of ongoing training necessary for emergency medical dispatchers.

Additional standards are necessary for those PSAPs that provide emergency medical dispatching. They need a dispatch response system approved by an emergency physician, systematic prearrival instructions, appropriate training, and mechanisms to review procedures and correct them when necessary to ensure quality.

2. Support a Trained and Qualified Work Force

PSAPs need to take steps to hire the right people for the job and provide them comprehensive initial and ongoing training. Using appropriate hiring practices, such as realistic job previews, tests of applicants' skills, background checks, and probation periods, can help PSAPs avoid the high cost of early staff turnover. Our survey revealed that, when compared to other PSAPs, more PSAPs using realistic job descriptions and testing job applicants had high employee retention rates. Throughout dispatchers' tenure, PSAPs need to conduct regular personnel evaluations. These are especially important in PSAPs because of the need

to identify and correct performance problems before they diminish public safety.

Clay County/Moorhead

In Clay County, newly hired dispatchers undergo 16 weeks of training. During each of four phases of the training, the trainee observes experienced dispatchers and learns from an extensive written training manual. As trainees demonstrate proficiency in the subject, the experienced dispatchers sign off on their mastery of it.

The comprehensive and systematic training prepares trainees for many different and difficult situations. It also results in a corps of dispatchers who have all learned approximately the same set of skills. Overall, the training increases confidence in the dispatchers on the part of officers and others in the field, contributing to a smooth public safety response to emergencies.

Training helps ensure that dispatchers have the skills, knowledge, and abilities to perform a highly technical and pressure-filled job. Not only do PSAPs need to provide extensive initial training to new employees, but they also need to target ongoing training to the individual training needs of their experienced dispatchers. Nearly all PSAPs provided some initial training for dispatchers, according to our survey, and about 57 percent required annual training customized to dispatchers' own needs.

3. Maintain Adequate Communications and Network Equipment

Maintaining adequate communications and 9-1-1 network equipment and databases is paramount to timely and appropriate service delivery. PSAPs need to invest in telephone equipment, such as three-way conferencing and speed dial libraries, to help dispatchers process emergency calls efficiently. Some PSAPs, typically those with higher call volumes and larger staffs, have purchased computer-aided dispatching equipment to automate many dispatcher functions and increase their efficiency.

To guarantee round-the-clock access to emergency services, PSAPs need to have in place uninterruptable power supplies and backup power sources to keep essential equipment functioning in the event of a power failure. According to our survey, over 80 percent of PSAPs had uninterruptable power supplies for at least some PSAP operations in 1996.

By law, PSAPs must provide equal access to emergency communications for individuals with speech and hearing impairments. This means having and maintaining the appropriate telecommunications devices for the deaf (TDD), training dispatchers to identify and process TDD calls, and preparing backup plans. Nearly 66 percent of PSAPs reported that they provide the same level of service for TDD callers as other callers, and about 87 percent reported that half or more of their answering positions had access to TDD devices.

To maintain effective communication with officers, fire fighters, and ambulance services, PSAPs need reliable radio systems and sufficient radio channels to permit immediate radio access. They also need equipment that allows confidential communications between dispatchers and officers when security may be at risk.

St. Louis County

St. Louis County's two PSAPs use computer-aided dispatch (CAD) to automate dispatching and track calls for service. CAD assists dispatchers by providing a time and date-stamped automated record into which the dispatcher need only enter information on the incident at hand; the calling party's name, phone number and address are automatically displayed for all 9-1-1 calls. CAD also displays the appropriate response agency for any given incident and identifies the response units in closest proximity to the incident.

PSAP officials also use the CAD as a management tool to track calls and dispatchers' responses to them. Monitoring calls through CAD allows managers to quickly investigate and respond to service problems.

For all of their communications and network equipment, PSAPs need to perform routine maintenance. Ongoing equipment testing ensures that the telephones, radios, voice recorders, and network equipment function properly. To replace worn out or obsolete equipment, PSAPs should develop equipment replacement plans.

PSAPs typically have to design and maintain “master street address guides” of street names and address ranges or databases of their service area’s residents, telephone numbers, locations, and emergency response agencies responsible for each location. In addition, they need procedures to routinely and constantly update these data sets to ensure that dispatchers have the correct information for dispatching emergency response agencies to the appropriate location.

4. Consider Opportunities for the Coordinated Use of Dispatching Equipment and for Cooperative Dispatching

Through the coordination of equipment purchases, PSAPs may be able to enhance their service and lower overall costs. For instance, coordinating the use of a single CAD system among PSAPs within a county can improve information sharing among jurisdictions and offer economies of scale in purchasing.

PSAPs should also consider arrangements, such as joint powers agreements, in areas where cooperative dispatching may yield better service and lower costs. With joint dispatching, local governments can gain savings by upgrading one communications center instead of two or more. One center will generally have fewer employees and less overhead than multiple centers. The cost of technological improvements are more easily borne when shared among multiple jurisdictions. Plus, a joint dispatch center can engender greater cooperation among public safety agencies in adjoining locations.

Because we cannot assume that cooperative dispatching will automatically produce benefits in every locale, each area has to analyze whether a joint effort will produce better service at lower costs. PSAPs considering joint dispatching have to

Rice and Steele Counties

The counties of Rice and Steele, and the city of Northfield, are merging their three PSAPs into one. In 1997 these entities, plus the cities of Faribault and Owatonna, signed a joint powers agreement to manage and finance the merged PSAP, and they expect to begin operations in late 1998.

The joint effort has been driven in large part by major technological improvements that none of the individual PSAPs could afford on its own. Participants expect improved records management, increased dispatch efficiency, more effective deployment of law enforcement officers in the field, improved communication between agencies in different jurisdictions, and savings in both capital and operating costs.

Involving all interested parties in the planning and implementation of the merger has been important to its progress.

manage operational, political, and governance difficulties. Furthermore, because some PSAPs use their dispatchers to perform multiple functions, such as those of jailers, they may not realize personnel savings. Even with a lower overall number of dispatchers, the jurisdiction may have to hire additional employees to fulfill those other duties.

5. Keep Records and Measure Performance

PSAPs need to maintain records and measure performance in order to determine which of their practices are successful and where gaps in service need to be filled. Although not a simple task, by setting goals and collecting data to measure how well they meet their goals, PSAPs are positioning themselves to improve their service delivery.

PSAPs must record 9-1-1 calls for service and retain those records for a minimum of 31 days, according to state administrative rules. Beyond data on calls, PSAPs should collect management information on personnel and equipment. Doing so helps PSAP managers make informed decisions on items such as when to replace equipment and what

Burnsville

PSAP officials in Burnsville track service problems and complaints with a systematic records system. Whenever a problem surfaces, a supervisor completes a citizen contact report to detail the nature of the problem and how it was resolved. All complaint information is computerized for easy tracking.

The system has proved helpful to verify service problems, especially unfounded ones. With the system, managers have a written record that indicates how well the dispatcher conformed to the PSAP's standards for any given incident. The written record offers a valuable tool in reducing the PSAP's exposure to potential liability in tort cases. In addition, the system provides a way for the PSAP to be consistent in its responses to complaints.

training is necessary for individual dispatchers. Tracking complaints about their service also gives PSAPs the information they need to correct problems and prevent others from occurring.

6. Promote Information Exchanges among Public Safety Response Agencies

For an effective public safety response, PSAPs need to communicate regularly with all emergency response agencies and solicit feedback on how the dispatch and communications system is functioning and what can be improved. This means systematic contact with law enforcement, fire protection, ambulance services, first responders, and any other agencies dispatched through the PSAP. Opening regular channels of communication for feedback from emergency response agencies can help a PSAP make whatever adjustments are necessary to improve its public safety communications.

PSAPs should also establish protocols with emergency service agencies that detail the activities each will follow in responding to requests for service. This enables the PSAP and others to coordinate their activities in advance so they will be prepared to act in an integrated fashion when emergencies arise.

According to our survey, about a third of PSAPs met on a monthly or quarterly basis in 1996 with emergency response agencies to discuss PSAP operations. Another 47 percent met with these agencies on an as-needed basis.

Ramsey County

Representatives from the Ramsey County PSAP meet on a rotating monthly schedule with officials from either police or fire departments in the county. The forums afford an opportunity for participants to discuss requests for changes in dispatching procedures, concerns over equipment and 9-1-1 system operations, and other problems.

In this way, the PSAP manages small problems before they evolve into major ones. The meetings indicate to the police and fire departments that the PSAP is concerned about meeting their needs. In addition, they give the dispatchers and other public safety personnel a chance to personally meet and develop rapport with one another.

7. Educate the Public on the 9-1-1 System and Services

To improve the likelihood that the 9-1-1 system will be used as intended, PSAPs need to educate the public. Effective public outreach can encourage people to use the system, instruct them on what information is necessary to provide to a dispatcher, and help reduce the number of nuisance calls.

A public education program should be ongoing, not a single event. It should also employ a variety of media in order to reach a broad audience. PSAPs may need to target their outreach efforts to groups such as the elderly, to persuade them to use 9-1-1, or children, to teach them when to call and what to expect.

Our survey indicated that more than 81 percent of all Minnesota PSAPs conducted some public education efforts in 1996. They used a variety of methods, the most common of which was public speeches to, and meetings with, community groups and civic organizations.

Mahnomen County

The Mahnomen County PSAP, serving about 5,200 residents, has a public education program to keep the public informed about 9-1-1 service. Representatives from the sheriff's office meet with numerous groups throughout the year, provide data on 9-1-1 calls for a weekly newspaper column, and operate a booth at the county fair.

Despite the small population of the county, PSAP officials believe meeting with residents is important because they want the public to understand and have faith in the PSAP's work. They want to encourage senior citizens and others to call 9-1-1 even when the individual may not be sure a situation constitutes an emergency. In addition, the sheriff views the outreach activities as opportunities to let the public know how its public-safety tax dollars are being spent.

CONCLUSION

Although the level of 9-1-1 service varies among PSAPs around the state, we found examples of best practices in PSAPs of all sizes and locations. We observed that police, fire fighters, and others in the public safety community rely heavily on dispatchers at the PSAPs in order to perform their jobs in the field. Further, dispatchers as a group take seriously the need to do their job quickly without compromising accuracy.

Most PSAPs in Minnesota are run at the county level and managed by sheriff's offices or joint law enforcement agencies. About two dozen PSAPs, concentrated largely in the Twin Cities region, are operated solo by cities or units of government other than counties. We saw no consistent differences in measures of effectiveness and efficiency when comparing cities operating their own PSAPs and their respective county's PSAP. In some cases, the county PSAP ranked higher on measures of effectiveness, and in others, the city-run PSAPs did. Because of the increasingly complex technologies used to provide public safety communications today, and the costs associated with them, areas with multiple PSAPs may encounter additional

incentives to consolidate their operations. In all cases, improvements in public safety must be the driving force.

Effective PSAPs offer comprehensive training to dispatchers, both when employees begin the job and over the years. Training in hard wire and wireless telephone technology, radio communications, effective telephone techniques, and the distinctions in service areas and responsibilities among response agencies are several of the subjects fundamental to successful dispatching. As PSAPs decide to provide emergency medical dispatching, the need for additional dispatcher training escalates.

We recommend that PSAPs around the state consider the seven actions we identified from industry standards for effective 9-1-1 service: (1) develop and use standard operating procedures, (2) support a trained and qualified work force, (3) maintain adequate communications and network equipment, (4) consider opportunities for the coordinated use of dispatching equipment and for cooperative dispatching, (5) keep records and measure performance, (6) promote information exchanges among public safety response agencies, and (7) educate the public on the 9-1-1 system and services.

Although other actions may also contribute to successful 9-1-1 dispatching, we consider these seven to be essential. How a PSAP actually implements the actions can vary and we learned of many PSAPs around the state that demonstrate how these actions have benefited them.