

Surviving Sudden Cardiac Arrest: Improving the Odds with Automated External Defibrillators

Synopsis

The Grand Jury investigated the need for Automated External Defibrillators (AEDs) in Santa Cruz County, how they are currently being deployed, and what policies are in place for their use in saving the lives of sudden cardiac arrest (SCA) victims.

An estimated 325,000 lives are lost each year in the United States due to sudden cardiac arrest.¹ From October 2004 through September 2006, 484 people were victims of sudden cardiac arrest in Santa Cruz County alone.² With the recent advances in technology, the modern AED units are simple and relatively low cost. Many lives could be saved if they were made available and used within the first few minutes after the onset of sudden cardiac arrest. Although fire and ambulance services in the county are well equipped and have an excellent reputation for effective medical response, their ability to reach a patient who is suffering from sudden cardiac arrest in time is highly problematic. The solution lies with AEDs being more widely distributed at key sites throughout the county.

In providing what is fast becoming a “standard of care,” the county must keep up to date with technology, national trends and the legal liability associated with failure to be proactive. The county should re-examine its policy and its requirements for the placement of AEDs as recommended in this report.

Definitions

AED

Automated External Defibrillator — a computerized medical device that automates the process of administering an electrical shock to the heart to restore its natural rhythm.

Advanced Life Support (ALS)

Medical care provided by emergency medical technicians trained to assess a patient's condition, administer drugs, defibrillate and provide advanced airway management prior to transportation to the hospital.

AMR

American Medical Response — a private ambulance service that coordinates with emergency services agencies in the county for first responder Advanced Life Support service. AMR is the sole provider of medical transport in the county.

Basic Life Support (BLS)

Basic Life Support consists of a number of life-saving techniques focused on the ‘ABCs’ of pre-hospital emergency care: Airway, Breathing and Circulation. BLS generally does

¹ Sudden Cardiac Arrest Association, <http://www.early-defib.org/learn.asp>

² Santa Cruz County Cardiac Arrest Audit 2004-2006, May 2007, p. 2 (hereafter referred to as “SCA Audit.”).

not include the use of drugs or invasive skills, but with advances in AEDs may now include defibrillation.

CPR

Cardio-Pulmonary Resuscitation.

EMSIA

Emergency Medical Services Integration Authority — a combination of county fire districts and departments that work together with American Medical Response to provide Advanced Life Support medical services in Santa Cruz County.

Net Com

Santa Cruz Consolidated Emergency Communications Center — the county’s primary response and dispatch center for 911 calls.

PAD

Public Access Defibrillator — an AED that is available in public and/or private places where large numbers of people gather or people who are at high risk for heart attacks live.

Standard of Care

The level of service that the average, prudent provider in a given community would practice.

VF/VT

Ventricular Fibrillation/Ventricular Tachycardia — chaotic heart rhythms that can be restored to a natural spontaneous rhythm through defibrillation.

Background

Heart disease is a serious public health issue. In the United States, at least 61 million people have cardiovascular disease, resulting in an estimated 1 million deaths per year. About one-third of these deaths, 300,000 to 400,000, are due to sudden cardiac arrest, the sudden and unexpected loss of heart function.³

Most often, sudden cardiac arrest is due to chaotic beating of the large chambers of the heart, called ventricular fibrillation. Typically, its victims have no warning and quickly collapse and lose consciousness. The only treatment that can save their lives is the quick use of a defibrillator, a medical device that administers an electrical shock to the heart to restore its synchronous pumping rhythm. Defibrillators work by giving the heart a controlled electric shock that has the chance to resynchronize the contraction of the heart muscle and restore its normal rhythm.

The overall survival rate for out-of-hospital cardiac arrest is 6.4 percent nationally and 6 percent in Santa Cruz County.⁴ Immediate treatment with defibrillation can improve the odds of survival significantly — resulting in greater than 90 percent survival. Every

³ American Heart Association, <http://www.americanheart.org/presenter.jhtml?identifier=4478>

⁴ SCA Audit, p. 4.

minute of delay decreases the survival rates by 10 percent; after 10 minutes without defibrillation, it is highly unlikely that a sudden cardiac arrest victim will survive.

Defibrillators are available in two forms, manual and automated. Only trained medical professionals are qualified to use manual defibrillators. Manual defibrillators require interpretation of the patient's condition and an understanding of the capabilities of the defibrillator to deliver an effective and safe shock.

Recently, as a result of technological advances and the development of special computer applications, a new kind of defibrillator has become available. Today's AED uses embedded computer chips and sophisticated programming to analyze heart rhythms quickly and accurately and determine if a shock should be given. It will only deliver a shock if the readings indicate that one is necessary. This automation makes it possible for non-medically trained individuals to deliver the same life-saving treatment as medical professionals without risking an accidental or inappropriate shock. Most modern AEDs are equipped with synthesized voice instructions telling the user how to proceed in the case of a cardiac emergency. This new equipment is very easy to use. In fact, in one study, untrained sixth graders took only 30 seconds longer than trained emergency service technicians to prepare a patient for a shock.⁵

Another advantage of modern automated defibrillators is the fact that, like most electronic equipment, they have become more affordable and available to the general public. In the past, their cost put them out of the reach of most people, but today they can be purchased through retail and online outlets for prices ranging from about \$1,000 to \$2,000.

The American Heart Association has recognized four critical factors associated with improved survival rates from sudden cardiac arrest in communities. More people survive when this sequence of events, called the Chain of Survival, happens as quickly as possible. These four steps are:

1. Early Access — recognizing that a cardiovascular emergency exists and immediately notifying the Emergency Medical Services (EMS) system, usually by calling 911.
2. Early CPR — starting CPR immediately after cardiac arrest to circulate blood to vital organs buys time for the victim until defibrillation can be administered.
3. Early Defibrillation — defibrillation of the victim as soon as equipment arrives.
4. Early Advanced Care — trained health care providers arriving quickly to administer advanced lifesaving interventions.

Establishing a viable chain of survival in a community requires an integrated plan that relies on the cooperation of local government agencies and ordinary citizens to know what to do and be prepared to take action when an emergency occurs.

⁵ Gundry, W., Comess, K., DeRook, F., and Jorgenson, D. AEDs user-friendly — even for children, October 17, 1999. http://www.eurekalert.org/pub_releases/1999-10/AHA-Auef-171099.php

Findings

Status of Emergency Services in Santa Cruz County

1. The 911 system for most of Santa Cruz County is administered through the Santa Cruz Consolidated Emergency Communications Center, commonly called Net Com. Additional public safety answering points for the 911 system are in Scotts Valley and at the University of California's Santa Cruz campus.

Response: The Santa Cruz Consolidated Emergency Communications Center (NetCom) PARTIALLY AGREES.

In addition to the primary public safety answering points (PSAP) mentioned within the Finding, it should be noted that Cal Fire maintains a secondary PSAP located in Felton which receives transferred 9-1-1 calls relating to fire incidents occurring within the unincorporated areas of the County not serviced by a Fire District.

Response: The Santa Cruz County Emergency Medical Services Integration Authority (EMSIA) AGREES.

It is important to note that many 911 calls are made by cell phones. When 911 calls are made by cell phones on or close to major roadways, the California Highway Patrol acts as the public safety answering point. Calls are then routed to the appropriate jurisdictional dispatch center.

2. Net Com is an up-to-date, modern facility. Dispatchers have access to computer-aided dispatch systems that allow them to rapidly send police, fire, and medical assistance when needed. For medical calls involving a person not breathing, such as sudden cardiac arrest, Net Com was able to dispatch Emergency Medical Service units within 60 seconds 92 percent of the time in 2006.

Response: NetCom AGREES.

Response: The EMSIA AGREES.

3. The Emergency Medical Services Integration Authority (EMSIA) — consisting of the Aptos/La Selva Fire District, Central Fire District, Scotts Valley Fire District, City of Watsonville Fire Department, and City of Santa Cruz Fire Department — provides first responder Advanced Life Support (ALS) medical services to the urban areas of the county.

Response: The EMSIA PARTIALLY AGREES.

The EMSIA consists of 12 Fire agencies in Santa Cruz County; Aptos/La Selva Fire District, Ben Lomond Fire District, Boulder Creek Fire District, Branciforte Fire District, Central Fire District, Felton Fire District, Pajaro Valley Fire District, City of Santa Cruz Fire Department, Scotts Valley Fire District, UCSC Fire Department, City of Watsonville Fire Department, and Zayante Fire District and acts as a liaison between the fire service, the County, AMR, and other EMS related entities. It is the five agencies listed in the finding, not the EMSIA, that actually provide advanced life support services. The remaining agencies provide basic life support (BLS) medical services within their jurisdictions.

4. The remainder of the county receives first responder Basic Life Support medical services from a variety of smaller fire departments and the California Department of Forestry.

Response: The EMSIA MOSTLY AGREES.

As described in #3, the EMSIA BLS agencies provide BLS Services to much of the county. The California Department of Forestry and Fire Protection (CALFIRE) provides BLS through its contract as the Santa Cruz County Fire Department. CALFIRE and Santa Cruz County Fire Department are not member agencies of the EMSIA.

5. American Medical Response (AMR), a private ambulance service, coordinates with the EMSIA agencies for first responder ALS service and through its contract with the County of Santa Cruz is the sole provider of medical transport in the county.

Response: The EMSIA AGREES.

6. EMSIA fire agencies are able to provide a paramedic to a medical emergency within eight minutes of dispatch 90 percent of the time in urban areas.

Response: The EMSIA AGREES.

Urban areas, as defined for the purposes of this finding, are the jurisdictional service areas of the EMSIA ALS agencies (Aptos/La Selva Fire District, Central Fire District, Scotts Valley Fire District, City of Watsonville Fire Department and City of Santa Cruz Fire Department). The actual performance level hovers around 94% of all emergency calls within eight minutes.

7. AMR is able to provide an ambulance to a medical emergency within 12 minutes of dispatch 90 percent of the time.

Response: The EMSIA AGREES.

8. A fire department paramedic is the first one to arrive at a medical emergency about 60 percent of the time.

Response: The EMSIA AGREES.

9. The expectations of service are carefully listed in the emergency services' contracts issued by the county to American Medical Response. AMR coordinates its services with the EMSIA to ensure the best possible service to the citizens of Santa Cruz County.

Response: The EMSIA AGREES.

AED Distribution and Training

10. Manual defibrillators, such as those carried by fire department and AMR paramedics, are expensive and complex and require significant training and experience to be effective. Conversely, automated external defibrillators (AEDs) are reasonably priced and simple to operate by anyone with a minimum of training.

11. Santa Cruz County does not have a comprehensive policy regarding the distribution and installation of AEDs in public locations.

Response: The County AGREES.

The County is not required by State law to adopt a policy regarding distribution and installation of Automatic External Defibrillators (AEDs) in public locations.

12. AEDs are carried in police patrol cars in Scotts Valley. No other law enforcement agencies in the county require AEDs in their vehicles.

Response: The Santa Cruz County Sheriff's Office PARTIALLY AGREES.

It is not known which law enforcement agencies in the county require AEDs in their vehicles.

Response: The Santa Cruz Police Department PARTIALLY AGREES.

Our agency does not require AEDs in all of our patrol vehicles but provides an AED in our supervisor's vehicle and outside of the main lobby of our police department.

Response: The Scotts Valley Police Department AGREES:

Scotts Valley Police carries AEDs in our cars. We do not know what the requirements are in other county law enforcement agencies.

Response: The Capitola Police Department DISAGREES.

Currently, the Capitola Police Department has five AEDs at its disposal. One AED is deployed at the Police Department for use by staff either in the field or at headquarters. An additional AED is located in City Hall for use by City Hall staff serving the public. Three additional AEDs are available and routinely assigned to the Lifeguard Unit located at the Capitola Main Beach, one AED in the Supervisors patrol vehicle and one unit deployed in a primary police cruiser. Additional AEDs are scheduled for acquisition in late 2007 or early 2008. Several of these AEDs have been in service for approximately two years. Eventually, the Police Department intends to equip each primary patrol unit with an AED, requiring acquisition of three to four more devices. It is important to note that an AED also are available at the Capitola Mall and readily available to department staff working at the Capitola Police Department's Community Outreach Center.

Response: The Watsonville Police Department PARTIALLY DISAGREES.

Capitola Police Department has many of them. Whether any other police department has them in the car, we don't know. We accept the jury's statement that Scotts Valley Police Department does.

13. The locations of AEDs in the county are not available to Net Com dispatchers.

Response: NetCom AGREES.

14. When AEDs are deployed in public buildings, they are often not visible and therefore not accessible when needed.

15. CPR classes, including training in the use of AEDs, are available through a variety of sources in the county.

Need for AEDs

16. While immediate CPR can buy valuable time for a sudden cardiac arrest victim, defibrillation is the only treatment that can save the victim's life by restoring the heart's spontaneous rhythm.

Response: The EMSIA AGREES.

Defibrillation is the most definitive intervention shown to restore spontaneous circulation in cardiac arrest patients. However, studies also show that effective CPR significantly enhances the success of all defibrillation attempts. Proper compression and ventilation (especially with 100% oxygen) is therefore a critical component of this "chain of survival." To this end, early 911 access is also crucial; the study here in Santa Cruz County showed higher survival rates with witnessed arrests vs. unwitnessed arrests.

17. People of any age may suffer sudden cardiac arrest and die suddenly.

Response: The EMSIA AGREES.

While the predominance of sudden cardiac arrests occur among elderly patients, it is true that no age group is immune from sudden cardiac arrest.

18. Sudden cardiac arrest is different from a heart attack although coronary artery disease may reduce heart circulation and eventually result in SCA.

Response: The EMSIA AGREES.

19. Often the first sign that a person is vulnerable to ventricular fibrillation is an attack that results in sudden cardiac arrest and death.

Response: The EMSIA AGREES.

20. In Santa Cruz County, approximately 250 people per year are victims of out-of-hospital sudden cardiac arrest. From October 2004 through September 2006, more than half of these victims (51 percent) were not candidates for resuscitation, mostly because too much time had elapsed before emergency medical services could be activated.⁶

Response: The EMSIA AGREES.

The patients in this study who were not candidates for resuscitation fell into one of three groups:

- 1. Patients who had been in cardiac arrest for too long before EMS was activated (the majority of patients were in this category);*
- 2. Patients who had signed paperwork indicating that they did not wish to be resuscitated, usually due to the presence of a terminal illness;*

⁶ SCA Audit, p. 6.

3. *Patients who had suffered traumatic injuries (58 cases) and were deemed unviable prior to a resuscitation attempt.*

21. Some common causes for sudden cardiac arrest include asphyxia due to drowning or other oxygen deprivation, congenital heart conditions, sudden blows to the chest, electrocution, and coronary artery disease.

Response: The EMSIA AGREES.

The vast majority of cases of sudden cardiac arrest in adult patients across all age groups can be attributed to the presence of coronary artery disease and/or cardiomyopathy, and the subsequent fatal arrhythmias which can occur in these patients. The most common cause of cardiac arrest in children is respiratory arrest secondary to a host of causes including drowning, foreign body airway obstruction, and respiratory disease.

Sudden blows to the chest, electrocution, and congenital heart conditions are very rare causes of sudden cardiac arrest in any community. “Asphyxia” refers to fatal anoxia from respiratory failure (from drowning, foreign body airway obstruction, severe asthma attacks, etc.) and is a more common cause of SCA in any community, but certainly far less common than cardiac etiologies.

22. The worst combination for cardiac arrest survival is if patients collapse without witnesses, and when discovered, receive no bystander CPR while emergency services personnel are en route. In a two-year period in Santa Cruz County, only two of 215 patients in this situation had their hearts begin to beat again, and neither survived. When sudden cardiac arrest was witnessed and immediate CPR was administered, nearly a quarter of the victims regained pulses and 10 percent survived. The survival rate jumped to 19 percent when EMS professionals witnessed cardiac arrest and could begin treatment immediately. There were 16 EMS-witnessed cases in the two-year period, and three of those were found to be in ventricular fibrillation (as opposed to those with no electrical activity or pulse). All three were successfully resuscitated with defibrillation only.⁷

Response: The EMSIA AGREES.

23. Some experts believe that a connection may exist between the use of ‘Tasers’ by law enforcement and sudden cardiac arrest in some individuals.

Response from the EMSIA:

This concept is very hotly debated among legal, medical and law enforcement experts. Much of the medical data at this time suggests that sudden, in-custody deaths may in fact be attributable to a medical phenomenon known as “excited delirium.”

Excited delirium is thought to occur when individuals — often, but not always, drug or alcohol intoxicated — develop central nervous system dysfunction which leads to bizarre, violent behavior. When force of any kind is subsequently used

⁷ SCA Audit, p. 6.

— wrestling with the patient, batons, Tasers, pepper spray — the patient may experience respiratory and cardiac arrest. There is no indication that Tasers particularly are implicated in in-custody deaths any more than any other use of force to try to control and contain a violent or non-compliant subject who suffers from this phenomenon.

24. To improve the survival rate of victims of out-of-hospital cardiac arrest in Santa Cruz County, the Emergency Medical Services Integration Authority recommends “promulgating citizen CPR programs, Public Access Defibrillator (PAD) programs, and continued rapid EMS response using all the latest AHA (American Heart Association) recommendations for CPR, defibrillation, and advanced life support care.”⁸

Response: The EMSIA AGREES.

Laws related to AEDs

25. Effective July 1, 2007, the State of California will require all health clubs to be equipped with AEDs on site and establish a program of training, maintenance, and record keeping.

Response: The EMSIA AGREES.

26. Good Samaritan laws protect most citizens from liability if they take action in a medical emergency, which includes using an AED. Conversely, lawsuits have been filed against organizations such as amusement parks and airline companies for not having AEDs readily available.
27. AEDs are now required at FAA governed airports and on all commercial airliners.
28. The Federal Cardiac Survival Act of 2000 (Public Law 106-505) directed the Health and Human Services Department to establish guidelines for evaluating and installing AEDs in federal buildings.

Conclusions:

1. In Santa Cruz County, the American Heart Association’s recommended ‘Chain of Survival’ for victims of sudden cardiac arrest is incomplete. Specifically, the availability of early CPR and early defibrillation is lacking.
2. Although Net Com and the Emergency Medical Services Integration Authority cooperate to ensure advanced life support (ALS) services are sent to medical emergencies as quickly as possible, even the most rapid dispatch and transit times by Net Com and ALS providers will rarely get a defibrillator to the victim within the three- to five-minute window recommended by the American Heart Association for best survival, especially in outlying areas of the county.

⁸ SCA Audit, p. 9.

3. Modern AEDs are simple to use and can improve the chances of surviving sudden cardiac arrest if they are deployed in the community and if there is a base population of trained citizens able to step in when a medical emergency requiring the use of an AED occurs.
4. When AEDs are deployed in the community, they need to be made visible and readily accessible to the public so they can be used immediately.
5. Net Com staff could improve response time in cases of sudden cardiac arrest if they knew the locations of nearby AEDs.
6. Deaths due to sudden cardiac arrest can be reduced through a combined program of public education in CPR and effective public access defibrillator (PAD) implementation.
7. The availability of an AED is becoming the expected ‘standard of care’ in many situations.
8. The availability of AEDs in county buildings — and their deployment in sudden cardiac arrest incidents — may protect the county from possible litigation and financial liability.
9. Providers of AEDs may be protected from liability if they comply with simple regulations regarding training, maintenance, record keeping, and medical oversight.

Recommendations

1. The Santa Cruz County Health Services Agency should establish a public education program to enhance the community’s knowledge and awareness of CPR and the use of AEDs as a life-saving measure.

Response from the County:

The recommendation is being implemented in conjunction with the Emergency Medical Care Commission’s Public Information and Education Subcommittee. The Subcommittee will continue to monitor local out-of-hospital cardiac arrest data and is working closely with Dominican Hospital to improve the survival rate.

2. The locations of AEDs in the county should be entered in Net Com’s Computer-Assisted Dispatch system.

Response from NetCom:

Requires further analysis and may not be implemented because it is beyond this agency’s scope of service. Netcom computer systems possess the ability to be programmed with AED location data tied to fixed telephone locations which would become available to call-takers upon call answering. While the technical capability and capacity exists, there is currently no program or system available to collect and update this location data, nor is there a requirement for businesses and individuals to “register” their AEDs by location. Furthermore, it is beyond the scope of our agency to mandate a registration and to be responsible for the collection of such data. In the event that a responsible agency should someday

register, collect, and update AED location data and make it available to our Agency in an electronic format, we in turn could enter it into our computer systems and make it available to call-takers handling 9-1-1 emergency calls. In the meantime, it is important to note that our computerized Emergency Medical Dispatch (EMD ProQA) software is configured to prompt call-takers to question callers who report “cardiac” incidents as to the availability and accessibility of an AED. In the event that a caller answers “Yes” to this prompt, EMD ProQA provides medically approved, step-by-step instructions which allows NetCom call-takers to “walk the caller through” the operation of an AED.

3. Santa Cruz County should require AEDs in county buildings with more than 100 employees or daily visitors and in county detention facilities, including Juvenile Hall.

Response from the County:

This recommendation will not be implemented at this time. While the County strongly supports the idea, funds are not available to purchase and install AEDs in all county buildings with more than 100 employees. The County will look for funding opportunities and will consider a phased in approach as part of County budget considerations.

4. Santa Cruz County should encourage the use of AEDs in the following public locales and private settings:

- Public schools
- Public swimming pools
- Public libraries
- Large concerts and other public events
- Public golf courses
- Churches with a capacity of 100 or more
- Private schools
- Private recreation clubs
- Medium to large hotels and motels
- Shopping centers
- Medical and dental offices
- Private golf courses
- Senior citizen centers and care facilities

Response from the County:

The recommendation is in the process of being implemented by the Emergency Medical Care Commission’s Public Information and Education Subcommittee that is focusing on cardiac care and stroke prevention. The Emergency Medical

Services Program will also be adding information about AEDs to the program's webpage.

5. The county and each city should equip law enforcement vehicles with AEDs.

Response: The Santa Cruz County Sheriff's Office AGREES.

This recommendation has not yet been implemented but will be implemented in the future. The Sheriff's Office has just purchased a few AEDs for deployment. However, due to the large number of Sheriff's vehicles, full deployment will have to occur in planned stages, along with the training of staff.

Response from the Santa Cruz Police Department:

The recommendation will not be implemented. Our agency is not a primary responder for medical calls and the Santa Cruz Fire Department staffs paramedics [are] primary responders for such emergencies. In order to outfit our patrol vehicles the department would have to outlay over \$50,000 in equipment and training costs.

Response: The Scotts Valley Police Department AGREES:

The Scotts Valley Police Department has carried AEDs in our patrol vehicles for several years now.

Response from the Capitola Police Department:

The Capitola Police Department agrees and is the process of acquiring additional AEDs and the requisite training and certification required to effectively deploy the devices in each primary patrol vehicle, office site and the Capitola Lifeguard Unit.

Response: The Watsonville Police Department AGREES.

Watsonville Police Department will put them in the next two-year budget cycle; FY2009/11 for consideration by the City Council.

6. The county should establish a mechanism to ensure that once AEDs are deployed by public agencies, those responsible meet the requirements needed to shield the county from liability by providing training, maintenance, record keeping and medical oversight.

Response from the County:

State law is clear that individuals and agencies that purchase and place AEDs are shielded from liability if they follow the requirements to maintain them and conduct training as required by the State.

7. The county should establish a reporting and inspection mechanism to ensure that AEDs deployed in the community are identified by Net Com and thereby viable in case of an emergency.

Response from the County:

Emergency medical dispatchers at NetCom routinely ask callers reporting suspected cardiac arrests to quickly look around for an AED. It would not be feasible to conduct inspections to ascertain where AEDs are located and to

establish and correct a database with any regularity. It is anticipated that in the near future AEDs will be as prolific as fire extinguishers.

8. The county should develop a strategy for implementing a meaningful public access defibrillator program that meets the criteria of the American Heart Association and American Red Cross recommendations.

Response from the County:

The recommendation is in the process of being implemented by the Emergency Medical Care Commission's Public Information and Education Subcommittee that is focusing on cardiac care and stroke prevention. The Emergency Medical Services Program will also be adding information about AEDs to the program's webpage.

9. The county should explore funding opportunities to pay for an expanded public access defibrillator program from both public and private sources, possibly enlisting the aid of community service organizations.

Response from the County:

The recommendation is being implemented by the Emergency Medical Care Commission's Public Information and Education Subcommittee that is focusing on cardiac care and stroke prevention.

Commendation

Santa Cruz County's emergency services teams and organizations for providing the most efficient and responsive services possible under current conditions.

Responses Required

Entity	Findings	Recommendations	Respond Within
Santa Cruz County Consolidated Emergency Communications Center	1, 2, 13	2	90 days October 1, 2007
Santa Cruz County Health Services Agency	11	1, 3, 4, 6-9,	90 days October 1, 2007
Santa Cruz County Board of Supervisors		1, 3, 4, 6, 8, 9	60 days September 1, 2007
Santa Cruz County Emergency Medical Services Integration Authority	1-10, 16-24		90 days October 1, 2007
Santa Cruz County Sheriff	12	5	60 days September 1, 2007
City of Santa Cruz Police Department	12	5	90 days October 1, 2007
City of Scotts Valley Police Department	12	5	90 days October 1, 2007
City of Capitola Police Department	12	5	90 days October 1, 2007
City of Watsonville Police Department	12	5	90 days October 1, 2007

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