POLICE COLLISIONS: TECHNOLOGY TO THE RESCUE
“I CALLED 911 BUT NO ONE RESPONDED!...”

by

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September, 2010

COMMAND COLLEGE CLASS 47
The Command College Futures Study Project is a FUTURES study of a particular emerging issue of relevance to law enforcement. Its purpose is NOT to predict the future; rather, to project a variety of possible scenarios useful for strategic planning in anticipation of the emerging landscape facing policing organizations.

This journal article was created using the futures forecasting process of Command College and its outcomes. Defining the future differs from analyzing the past, because it has not yet happened. In this article, methodologies have been used to discern useful alternatives to enhance the success of planners and leaders in their response to a range of possible future environments.

Managing the future means influencing it—creating, constraining and adapting to emerging trends and events in a way that optimizes the opportunities and minimizes the threats of relevance to the profession.

The views and conclusions expressed in the Command College Futures Project and journal article are those of the author, and are not necessarily those of the CA Commission on Peace Officer Standards and Training (POST).
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Imagine you are home alone when you hear a very heated argument from the couple who live next door. You become very concerned when you start to hear items breaking; and then, the wife starts screaming. You make the 911 call to the police, hoping that within minutes, she will be safe. As you begin to hear the faint sound of a police siren you hear the wife scream that her husband has a knife and is going to kill her. You keep looking out your front window for the police to arrive. All of a sudden you don’t hear the sirens anymore and the police officers do not arrive.

The wife continues to scream; you feel helpless. You call 911 again and inquire as to why the police have not shown up to this in-progress emergency call. The dispatcher tells you the officers were involved in an accident while they were on their way, and a second set of officers is now being dispatched. Unfortunately, in the time delay created by the collision, the woman was stabbed by her husband and died. What the dispatcher didn’t say was the two police officers responding to this call crashed into each other at an intersection about six blocks away; one was killed and the other was severely injured.

Although the scenario is fiction, the issue of police collisions is not. Recent research has explored different ways to try and prevent or minimize horrific public safety vehicle accidents in California by utilizing Accident Avoidance Technology. The research has been promising, and indicates that pursuing the statewide implementation of such technology in public safety vehicles is a worthy goal. This article will highlight the importance of achieving that goal.
**Challenges Facing Emergency Drivers**

Because of the nature of emergency driving, public safety vehicles are involved in many collisions when responding to emergencies, when pursuing suspect vehicles, and even while on routine patrol. Many factors are competing for an officer’s attention when he or she is responding with lights and siren to an emergency (Schultz, 2009). Police officers are usually on mental overload because they are thinking of all sorts of things while pursuing a fleeing vehicle or driving under emergency conditions. The officers are listening intently to the police radio for any updates from the dispatchers while they are navigating the congested streets. They are also watching for pedestrians, bicyclists and other motorists who may have not heard their sirens. During emergency responses, some officers may understand the potential problems and drive quickly and safely without substantial risk to themselves or others (Schultz, 2009).

In contrast, some officers may undergo physiological changes from the fast driving and create risks. For example, they may experience an adrenalin “kick,” causing them to focus almost solely on the need to get to a specific location quickly and may incur myopia and auditory lockout (Schultz, 2009). In addition, being barraged by piercing sounds from the siren and blinding lights from the emergency equipment, especially at night, can cause them to experience a false sense of security. Such distractions can impact and often impair an officer’s decision-making skills (Schultz, 2009).

According to California’s Police Officer and Standards agency, (POST) hundreds of California police officers are injured or killed in on-duty traffic collisions every year. According to the National Highway Traffic Safety Administration, police pursuits kill an
average of one person a day in the United States (Luntz, 2007). Between 1990 and 2004,
more than half (55%) of officers killed while driving were responding to calls for service.
Speed was a factor in the majority of cases (83%). In fact, many more police officers are
killed in vehicle-related accidents than are killed by criminals. Today’s public safety
vehicles are generally not built with equipment specifically designed to avoid collisions.
With emerging technologies, though, now is the time to develop and implement Accident
Avoidance Technology.

Accident Avoidance Technology (AAT) is any technology-based tool to assist
drivers in avoiding collisions. This would include systems that would emit a cautionary
audible or visual signal to the driver. Another example of this would include a public
safety dispatcher initiated warning based upon Global Positioning Satellite (GPS)
mapping. A version of this technology called Automatic Vehicle Locator (AVL) is in use
today in North Platte, Nebraska where dispatchers can view emergency vehicles
navigating to the scene of an incident (GeoLynx, 2010). If a vehicle misses a turn or
cannot locate the address, dispatch can provide turn-by-turn directions by viewing their
location and the location of the incident on the map. Mary Ann Agler, a 911 operator in
North Platte said the AVL system continues to be invaluable. As this technology
advances the dispatcher should be able to see all of the emergency units in real time on a
screen and can advise them when they are about to collide with another public safety
vehicle. Lastly, it would involve any technology that automatically changes the car’s
movement, like automatic braking or a lane departure warning. All of these technologies
are readily available today; what is lacking is a cohesive process to assess and adopt the
ones best suited for police use.
A Panel of Experts Weighs In

Recently, a group of experts, including engineers, police managers, and civic leaders met to brainstorm possible solutions to this problem. While this panel came up with a wide variety of possible remedies, the underlying theme of the discussion was to take advantage of recent breakthroughs in AAT.

The group gave specific examples, like utilizing Global Positioning Satellites (GPS) to monitor the location of public safety vehicles and developing electronic notifications to the public regarding emergency vehicle traffic. In this scenario, drivers of vehicles would be notified via GPS devices, text messaging, cellular telephone alerts, or though the car radio if there is a nearby public safety vehicle driving under emergency conditions. According to the Aerospace Corporation, the future of GPS is as unlimited as your imagination (Aerospace Corporation). New applications will continue to be created as technology evolves. GPS satellites, like stars in the sky, will be guiding us well into the 21st century. The group felt that if motorists were notified earlier regarding the presence of an emergency vehicle they would have more time to act accordingly and avoid interference.

The group also felt that accidents between emergency vehicles are mostly preventable utilizing technology similar to that used in the aviation industry. A dispatcher could monitor the location of emergency vehicles on an electronic board and warn them if they are going to collide. The experts also discussed that car manufacturers are building cars with several automatic safety features to prevent accidents. BMW is going to include a night vision system on its soon to be built vehicles. By using infrared
technology it will illuminate any heat-emitting object up to 1000 feet in front of you, and display it on a screen in the center of the dashboard giving you advance warning of a vehicle ahead (England, 2010). The latest Volvo "Collision Warning with Auto Brake" system uses radar-sensor data for vehicles ahead and automatically alerts the driver if they're getting too close; it actually applies the brakes if the system judges a collision unavoidable (Halvorson, 2009). Both of these inventions would greatly benefit public safety agencies by reducing accidents during routine driving and driving under emergency circumstances.

The panel’s consensus was that technology must be developed specifically for public safety agencies to neutralize some of the human factors in the equation. Although expensive to develop and implement, these technologies could supersede an officer’s actions in emergency situations, warn others of their approach and advise units in possible conflict with one another. They recommended utilizing private sector avoidance innovations that are currently being developed by companies such as Mercedes Benz and BMW. While up-front costs could be significant, the experts agreed that those costs would be offset by the savings in terms of property and lives.

**Public Safety Needs Accident Avoidance Technology**

The public has an expectation that police officers are well trained drivers and should not be colliding with each other. AAT can prevent or minimize these costly and dangerous collisions. According to the Insurance Institute for Highway Safety more than 2.2 million crashes, with 7,166 fatalities occurred annually, on average, during the 2002-2006 period that might have been prevented or made less severe if cars had systems that
anticipated a head-on collision, and braked the car. This is a substantial reduction in
crashes while utilizing just one type of emerging AAT. Theoretically, this new
technology could provide emergency vehicles with an electronic cushion of safety to alert
officers when their driving is unsafe or when they are about to collide with another
vehicle. Such a safety improvement would be extraordinarily beneficial to the law
enforcement profession.

For example, officer-involved crashes have cost the City of Los Angeles more
than 11 million dollars since 2006 (California Personal Injury Attorneys, 2009). Also,
line of duty deaths rose 20 percent during the first six months of 2009, after falling to
their lowest level in nearly five decades in 2008. The number of officers killed in traffic
related incidents increased 17 percent during the first six months of 2009. For 12 years in
a row, traffic related incidents remain the leading cause of death for law enforcement
After developing and implementing this technology agencies would see a decrease in
civil litigation pay-outs and property damage costs. Most importantly, the senseless loss
of lives would be reduced – which is priceless.

Other benefits that agencies would see after implementing AAT would be
reductions in response times to emergencies by eliminating collisions involving
responding police units. For larger agencies, the impact on resources may not be as great
as for smaller agencies. Large agencies can simply dispatch new units to the original call
for service, but for smaller agencies the involved vehicles might be the only ones
available.

Emerging developments
There are currently both private companies and public agencies working on developing this technology for not only public safety vehicles but for all types of vehicles. The Robert C. Byrd Technology Transfer Center has expressed an interest in identifying emerging technologies with applications to the needs of the emergency response community and working with developers to commercialize these needs (Werner, 2003). There are several technological advances that can be applied towards this endeavor. Some specific examples of AAT that may be on the near horizon are GPS technologies, audio warnings, and Emergency Vehicle Early Warning Safety Systems.

As previously documented, collisions with emergency vehicles are common events. Many of these collisions occur at intersections. Private vehicles approaching at 90 degrees to the direction of travel of emergency vehicles are very difficult to see. Using sensors mounted on the emergency vehicle, in fixed locations near the intersection, or both, could alert emergency vehicle drivers and other motorists of approaching traffic and an impending accident. Research and implementation of the following technology would serve to advance the reduction of accidents at intersections:

Radar Sensor Technology is an application that could be adapted for use with emergency vehicles. This technology, already in use in aviation, uses Global Positioning System (GPS) or Automatic Vehicle Locator (AVL) and can be linked to Communications Centers and Computer Aided Dispatch (CAD) mapping (Werner, 2003). Development and implementation of Radar Sensor Technology can be used to establish a “circle of safety” around an emergency vehicle. This would create a shield with an audible warning that would serve to prevent pedestrian accidents and vehicle collisions in general.
An Audio Vehicle Navigation System (AVNS) is another application that can be used to prevent accidents for emergency response vehicles (Werner, 2003). This system provides audible directions to a police officer while he is responding to emergency incidents. Instructions are provided directly to the driver, keeping his or her attention on driving. When a police officer is dispatched to an emergency call, the in-car computer would automatically detect the fastest and most efficient route to the scene. The computer would then audibly instruct the officer, street by street, on the preferred route. Most of this technology is already available and is used in in-car navigation systems in many private vehicles on the road today.

Emergency Vehicle Early Warning Safety System (E-VIEWS) is another viable application in police work to reduce accidents at intersections (Werner, 2003). This is a first-of-its-kind signal preemption and warning mechanism. High-intensity light-emitting diode displays are positioned above the centers of intersections to alert motorists from which directions emergency vehicles are approaching. For example, the City of Monrovia, California has the E-VIEWS equipment installed at eight of its busiest intersections. While there have been other signal preemption devices this one is the first to have visual displays and flashing icons to notify drivers of the emergency vehicle(s) approach.

In *Future Technology in Law Enforcement* Reed (2008) notes that new technology may be developed as an AAT using Augmented Reality. This technology virtually overlays computer generated images onto a person’s real-world vision. Situational awareness is greatly improved, and possible uses for law enforcement could be to have a patrol car driver receive a heads-up display to make driving safer and more
efficient in routine and emergency situations. The officer’s display could alert them to a nearby public safety vehicle so a collision could be avoided. Another possible use could be to project a display so that a dispatcher could see a three-dimensional map of the area so the dispatcher would know if two public safety vehicles are getting dangerously close to each other.

There have also been new advances in technology that can actually anticipate dangerous situations. In *Can Technology Make Safer Drivers?* Joseph White (2008) stated that AAT have been actively discussed for several years by the auto industry futurists. Further, some early AAT have already been deployed in some vehicles. Forward collision warning with automatic braking, emergency brake assistance, lane departure warning, blind spot detection, and adaptive headlights are either in production or prototype form. One of the systems senses when a driver is closing too rapidly with an object ahead, and the vehicle automatically tightens the seatbelts applies the brakes if the driver doesn’t. This technology confronts drivers with the unpleasant truth that a properly engineered machine can react more rapidly in an emergency than most humans can (White, 2008).

**Conclusion: Accident Avoidance Technology Saves Lives**

By the year 2019, AAT should be installed in all public safety vehicles. This will minimize collisions that cause injury and death and save the taxpayers millions of dollars in civil lawsuits due to avoidable accidents. Consider how the scenario in the introduction could have been different. If both police vehicles had been equipped with AAT, they would have been warned that they were approaching each other on a deadly
path. One police unit could have momentarily stopped while the other one proceeded through the intersection. They would have had the opportunity to complete their timely response, and most likely have prevented a criminal homicide. By utilizing these devices, technology can come to the rescue of this serious problem. This, in turn, will ensure that if someone calls 911, emergency personnel will arrive without delay.
BIBLIOGRAPHY


