

# EMERGENCY BLUE LIGHT OUTDOOR CALLBOXES VERSUS CELL PHONES:

## A COMPARISON OF WIRELESS COMMUNICATIONS DEVICES AND EMERGENCY CALLBOXES FOR PUBLIC SAFETY EMERGENCY COMMUNICATIONS ACCESS ON COLLEGE AND UNIVERSITY CAMPUSES [© 2012]

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*\*[The author served as a Communications Director for the 9-1-1 PSAP/Emergency Communications Center at UCB DPS for 34 years before retiring. During that tenure he was involved in the evolution and development of the emergency callbox system for the UCB campus. The opinions and viewpoints contained herein are those of the author, based on those experiences. This document may be useful to other higher education institutions that may or may not have similar emergency public safety access systems and procedures. The author is a certified Emergency Number Professional [ENP] of the National Emergency Number Association [NENA], and a member of the Associated Public Safety Officials, International [APCO]. He served as a representative to the Emergency Management Operations Group [EMOG] of UCB, and to the Boulder County Emergency Management Multi-Agency Coordinating Council [MACC], and was a participant in the FEMA Community Disaster Preparedness Conference at the National Emergency Training Center in Emmitsburg, Md. He is an American Red Cross Health and Safety/Community Disaster Education Instructor, and was a Colorado certified Emergency Medical Technician for more than 30 years.*

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### **Overview:**

The University of Colorado at Boulder Department of Public Safety has utilized the *Code Blue*® emergency callbox system throughout the Boulder campus for decades, and has found them to be a highly effective integral component of the community-based policing approach for the safety of the campus community.

<http://www.colorado.edu/police/index.html>

The UCB campus has used such emergency outdoor callbox phones since the early 1970's and developed a prototype version long before they even became commercially available and popular for campus applications. Each phone is connected via hardwired underground telephone cable to the campus PBX switch and reports as a 9-1-1 call which is automatically routed into the 9-1-1 system to the CU 9-1-1 Public Safety Answering Point (PSAP). Power for phones and lighting is provided by underground cable as well. (Battery backup systems are available for Code Blue callboxes which would temporarily maintain their operation in the event of a major power outage). Weekly checks are made and documented by Community Service Aides (student security members) on each callbox to verify operation with the Communications Center and outages are reported for prompt repair.

<http://www.colorado.edu/police/safety/emergency-telephones.html>

<http://www.colorado.edu/safety/report/incident.html>

### ● ***Effectiveness of Emergency Callboxes in life safety emergency reporting at UCB***

There are cases where the Code Blue callboxes have resulted in lives saved (e.g., a drowning in progress in Boulder Creek during Spring high water runoff, which was rapidly reported via a nearby bikeway callbox by a student, and the victim was saved by responding officers and firefighters. Other examples include sexual assaults, assault and battery and other violent in-progress crimes, injury accidents such as bike collisions on the bike paths, vehicular-pedestrian accidents, thefts in progress such as bike thefts from bike racks, etc. Medical emergencies such as sudden cardiac arrests (SCA) have been reported via callbox, particularly during football games when the incident occurs at or near the stadium and adjacent parking areas where blue light phones are deployed.

Current UCB DPS personnel can perhaps relate other more recent documented incidents. Contact is available via the above website.

- ***Other campus blue light callbox installations:***
- The University of Arizona also is expanding their blue light callboxes and report frequent use of the phones.

<http://uanews.org/node/2704>

- ***Overview: Campus vs. Surrounding Community demographics and public safety aspects.***

The typical University/college campus differs from the surrounding community in that the population is largely somewhat transient, young and although very intelligent, may be less knowledgeable or experienced in methods of personal safety and precautions. Moreover, the campus is largely pedestrian oriented with most students walking or biking to and from classes and activities and their residences either on or off campus, thus are perhaps more vulnerable than families and other members of the surrounding community who often drive to and from their homes to daily destinations of work, shopping, etc. Accordingly, providing students and faculty/staff with knowledge of the availability of emergency callboxes and associated safety education programs is essential to their well being.

There is certainly a perception of greater safety (on the part of the campus community) afforded by the presence of such "system entry" devices because they are very simple to use with a one-button activation to initiate a 9-1-1 call to the University's 9-1-1 PSAP Communications Center. Such calls provide an exact number and location (ANI/ALI) being displayed for the dispatcher, and thus save precious seconds in getting help to the specific location where the event is being reported. Additionally, the devices activate a strobe light on top which helps responding officers to see the location of the activated phone quickly. The strobe may also help deter perpetrators since they see that a phone has been activated.

The several UCB campus parking structures have two emergency callbox phones on each level and permit one button 9-1-1 emergency access as well as for dialing other non-emergent calls. All the stand-alone external outdoor callboxes only provide one button activation for access via 9-1-1 to the CU PSAP

The City of Boulder also saw the advantages of blue light callboxes used on the campus, and installed some of their own in off-campus but adjacent areas frequented by students and others where crimes were also high, and have had a similar beneficial effect in reporting emergencies over the years.

### ***Cell phones and blue light callboxes: Complementary advantages and weaknesses***

- ***Little known inadequacies of wireless cell phones when used for 9-1-1 calls:***
- Automatic Location Identification (ALI) for cell phone calls in some areas of the U.S. may not be widely available [**Wireless Phase 2 Enhanced 9-1-1**]. For those areas where Wireless Phase 2 is operational, under *ideal* conditions, location reporting may be as accurate as 25 yards or less. Wired phones generally provide accurate ALI reporting in areas served by conventional enhanced 9-1-1 PSAP's.

- While it is good that many members of the campus community carry cell phones, and may use them to report emergencies, *very few wireless subscribers are aware that 9-1-1 public safety answering point [PSAP] dispatchers in some venues may not be able to accurately determine exactly where a 9-1-1 cell phone call is originating from and must ask or verify with the caller where they are.*
- *If a caller is unfamiliar with their surroundings or does not know where they are, or if they are unable to speak due to an injury or other circumstance, the dispatcher may have significant difficulty in sending help to their exact location promptly, [when compared to the accuracy of wired phones or emergency callboxes].*
- *Even where Wireless Phase 2 ALI is available, if the call originates within a large multi-story building, [such as a dormitory or classroom building] it may be extremely difficult for the dispatcher to get an accurate location on the cell phone where the 9-1-1 call originated unless the caller is able to provide the exact location verbally. The building tends to absorb and weaken the wireless signal and may distort the accuracy of the location due to shielding or other interference.*
- *Other factors that lessen wireless device location accuracy are weather, obstructions, weak signal areas that can affect the accuracy of GPS and cell tower calculations which could decrease the accuracy of location from about 25 yards, ideally to hundreds of yards or even more.*

See NENA website for wireless 9-1-1

<http://www.nena.org/?page=911Cellphones>

*Enhanced 9-1-1 Wireless phase 2 [E9-1-1 WP2] technology which displays location of wireless phones at a PSAP has been mandated by the FCC for many years. However, implementation has been very slow due to manufacturers' reluctance to comply and offer phones with ALI technology. Moreover, the ability of some 9-1-1 PSAP centers to implement the WP2 technology required to display wireless automatic location identification [ALI] information is not yet fully completed in some jurisdictions. Consequently, some PSAP's may not yet be equipped to receive ALI information from cell phones.*

See NENA WP2 E-9-1-1 deployment maps for specific areas where various levels of wireless 9-1-1 technology is implemented

<http://nena.ddti.net/Default.aspx>

- *Default Routing of 9-1-1 cell phone calls.*

*Cell phones that dial 9-1-1 may be default-routed to a city public safety answering point [PSAP] or highway patrol PSAP rather than the campus PSAP, so time is lost in determining where the call originated and having the call transferred to the appropriate campus PSAP. Also many cell users don't always know to call 9-1-1 for emergencies and may not know what other number to call. **Conversely, the callbox helps to lessen those uncertainties and time wasting efforts in order to avoid potentially life threatening delays in initiating a response for critical situations.***

- **Call-taker procedures for handling emergent calls**

**Many individuals who have occasion to call 9-1-1 for an emergency may have never done so before, and thus are uncertain of what information is important to provide. Typically, the 9-1-1 call taker will answer the call by saying "9-1-1, where is your emergency?" Once the caller states where they are, the dispatcher can determine what the emergency is, and then promptly get first responders alerted and headed in that direction. If a medical emergency is reported, the dispatcher can initiate emergency medical dispatch and provide pre-arrival instructions for the caller to assist the victim until first responders arrive which has proven to be lifesaving in many instances. If the callbox is equipped with an AED and the victim is in cardiac arrest, the dispatcher can instruct the caller in administering CPR and using the AED which can be a lifesaving procedure.**

- **Case Histories where wireless 9-1-1 callers could not be located due to lack of ALI information**

A number of news documentaries in the past few years have reported tragic incidents where wireless 9-1-1 calls were received from callers who either could not speak or did not know exactly where they were (e.g., two boys in a boat at sea that were lost in adverse weather, and called 9-1-1, but could not be located in time and perished. In another case, a woman in a car which plunged into a canal at night, called 9-1-1 and similarly could not be located in time so also perished).

- ***Unregistered or unsubscribed "recycled" cell phones have serious limitations for public safety***

Recycled or unsubscribed cell phones which cannot be used for making regular calls, [while still capable of initiating 9-1-1 calls] generally may NOT provide Automatic Number Identification (ANI) and thus preclude a dispatcher from calling them back if the call is lost. Similarly they often are older recycled phones which may NOT provide ALI information from GPS, so may seem like a useful device but otherwise may give a false sense of security if distributed broadly to members of the campus community and others which many well-intended but uninformed organizations are doing without realizing the limitations of such devices.

*Voice over Internet Proposal* (VoIP) phone systems in some cases have issues with ALI reporting for 9-1-1 system access unless they are properly configured, and registered in the 9-1-1 data base.

- ***Next Generation 9-1-1 (NG 9-1-1) digital emergent texted calls and devices***

Next Generation 9-1-1 (NG 9-1-1) task force groups in the National Emergency Number Association [NENA] and the Association of Public Safety Communications Officials [APCO], along with government agencies, are working on improving technology of 9-1-1 PSAP to receive emergent calls via a host of new wireless digital voice and *Next Generation 9-1-1 (NG 9-1-1)* text messaging systems. Many digital wireless device users are not aware that 9-1-1 centers for the most part cannot presently receive digital text message requests for emergency help. *Despite the fact that callers could have simply dialed 9-1-1 and reached a dispatcher via voice channels on the same device, they attempted to make contact via text messaging resulting in a delay in response or no response at all.*

*Digital text messaging for emergency calls is vastly inferior to voice communications from a public safety standpoint as much more vital information concerning an emergent situation is available through direct voice communication between the caller and the dispatcher. Dispatchers need to hear the caller's voice to determine many things such as background sounds, screams, the apparent age or condition of the caller from voice inflection, etc. Also it takes far less time to elicit needed information from a caller via verbal exchange of information than by texting. It is somewhat analogous to preferring the obsolete 19<sup>th</sup> century Morse code telegraph to the Bell voice Telephone. Texting is very faddish among youth, but has great disadvantages for reporting time critical emergent situations. It is well known that hearing/speech impaired individuals are limited to such devices (TDD/Text Telephone) for calling 9-1-1, but given a choice, dispatchers would much prefer direct voice communication whenever possible.*

See NENA NG 9-1-1 information

[http://www.nena.org/?NG911\\_Project](http://www.nena.org/?NG911_Project)

- *Why Install or retain fixed blue light phones on campuses? (Exact location reporting is vital)*

There are many members of the campus community who, for whatever reason, may not have (or otherwise may not be carrying) a cell phone, or the cell phone battery may be down, etc., so having a fixed and reliable emergency callbox strategically located nearby can be very reassuring. Similarly, there is a possibility of the caller not being familiar with the geography and landmarks, thus being unable to give the dispatcher an exact or accurate location with a cell phone, where a callbox always reports a precise location reliably.

- *Cell phone networks may "busy out " or fail during major emergent situations*

Cell phone networks may "busy out" due to overload from too many subscribers trying to access the system during emergent situations when emergency access is most needed (e.g., major terrorist event, campus shooting, natural or man-made disasters such as hurricanes, tornadoes, earthquakes, floods, wildfire, hazardous materials spill, etc.). Similarly cell sites can suffer damage from disasters and fail in critical times. This is an increasingly worrisome aspect for public safety when the cell system overloads and does not provide emergency access.

Fixed, dedicated wired phones that dial 9-1-1 are more likely to provide emergency access to a PSAP during emergent situations, so having *both* technologies available is a very good failsafe for the campus community and for public safety response.

- *Rapid 9-1-1 System Access importance:  
Medical Emergencies, Saving lives, deterrence of criminal activity and apprehension of perpetrators*

Critical medical emergencies such as sudden cardiac arrests (SCA) must be rapidly reported. SCA is the leading cause of death in the U.S. [more than 250,000 lives lost annually] and rapid response is critical to lifesaving medical intervention. *Seconds literally count in such situations and providing appropriate resources for rapid reporting is vital. It is estimated that SCA deaths could be reduced by half if a broad spectrum of the public were trained in CPR and AED use with widely available AED devices stationed strategically in living and working areas, and in outside venues such as emergency callboxes.*

*Code Blue callboxes can be provided with Automatic External Defibrillators (AED), emergency outdoor warning public address speaker systems, and video surveillance cameras for enhanced functionality. Moreover there are a variety of wall mounted callboxes with these special features that can be installed inside building lobbies or hallways to provide not only emergency system access, but the added public warning and emergency medical services devices in the same installation which can be lifesaving.*

- *AED's and Emergency Medical Dispatch (EMD)*

Many public locations such as airports, transportation, schools, businesses are now placing AED's in callbox locations to permit emergency resuscitation of victims of SCA or other medical emergencies before first responders can arrive which can be life saving since the first few minutes of resuscitation are critical in the *Cardiac Chain of Survival*. Dispatchers trained in Emergency Medical Dispatch protocols [EMD] can provide pre-arrival initial instruction to callers prior to arrival of first responders which may be lifesaving.

<http://codeblue.com/product/dfb-1-s/>

- ***Public Address Warning functionality***

Callboxes can also be equipped with public address systems to permit giving instructions campus wide in the outdoor areas and complements the emergency warning capability of public safety for those who are not carrying cell phones, or are not near wired phones or computers where they could receive such notifications. Similarly, strobe lights on the tops of callboxes can be set to flash when public address messages are being broadcast to further enhance warning. Cell phones, wired phones, and e-mail servers can be subscribed to emergency fan-out warning call systems sometimes called "*Reverse 9-1-1*" ® or "*Code Red*" ®, et al, which deliver rapid high volume emergency messages to warn of campus emergencies such as natural hazards, shootings, etc.

<http://codeblue.com/product/blue-alert/>

- ***A multifaceted approach to delivering warning messages is vital in any community.***

It must never be assumed that only one channel of emergency warning will simultaneously reach the vast majority of the campus community. A variety of channels would include emergency messages sent to wired and wireless telephone subscribers which many campuses now use. Additionally, text messaging via e-mail and website are effective, as well as links to public address systems in the form of outdoor voice/tone warning sirens, or internal fire alarm and other building public address systems, LED electronic signage displays in public areas (such as libraries, stadiums and events centers), television interrupt and crawler messages via video displays in class rooms, and on televisions in residence halls, can all be tied to a central warning methodology. Technology is also being developed which would turn on televisions automatically to receive warning messages even if the resident is sleeping. National studies are underway to determine the most efficacious means of channeling emergency warning messages through a wide variety of media to reach as many as possible as quickly as possible.

Faculty members of the renowned *Natural Hazards Research and Applications Center* at the University of Colorado at Boulder are considered among of the foremost authorities on how individuals receive and respond to emergency warnings, and essentially determined that messages must be consistent, and received from a variety of sources in order to be considered credible. Otherwise if messaging is inconsistent, vague, or otherwise not verifiable, individuals tend to deny the veracity of the warning and may not react appropriately or in a timely manner. Delays in responding quickly to warning messages can result in injury and death in some natural and man-made hazard situations.

- ***Digital Video Surveillance (DVS) Cameras.***

Many campuses are widely using digital video surveillance cameras in a variety of areas. Callboxes can be equipped with such devices which can permit dispatchers to view and record images of the area in which a callbox is activated to see what the situation is and provide such information to responding officers. DVS may also serve as a further deterrent to criminal acts and to pranks or false callbox activations. With increased concern for terrorism and related risks, public safety agencies nationwide are expanding their use of such devices.

- ***Deterrence of crimes is not as important as giving the public a way to rapidly report emergencies***

The "deterrence of crime" is not a criterion that should be used as a significant or measurable justification for not installing or otherwise removing callboxes. What is important is giving the victims/witnesses a readily available means of reporting emergencies of all kinds. *Most criminals are not noted for their intelligence or good judgement and will offend no matter what deterrents are in place in most situations.* Crimes are often committed in public areas in broad daylight and sometimes even in sight of police officers (e.g., bike thefts) so the perpetrators may have a sense of "invulnerability" and daring which often allows them to elude detection and capture.

The more they succeed, the more likely they are to repeat their crimes and often in the same areas. When a crime is witnessed, rapid reporting by victims/witnesses often makes all the difference in getting police to the scene while perpetrators are still in the act and thus more vulnerable to capture.

Blue light emergency callboxes may or may not deter some perpetrators from committing a crime, however, the victims/witnesses should be made aware that they can quickly report the crime via callbox in a very short time, perhaps giving responding officers an opportunity to interdict the event or pursue the perpetrators successfully with good descriptions and direction of travel information.

The UCB campus experience with successful use of the blue light phones has been the rapidity with which crimes/emergencies are reported and thus a successful outcome in many cases. Not having such resources would likely have resulted in not capturing perpetrators or being able to respond as quickly thus enhancing the opportunity for escape.

- ***Community-Based Coalitions for Public Safety***

UCB has long recognized the value of Community-based coalitions and Community Policing in an effort to maximize the campus community's participation in a comprehensive public safety program. The callbox system is just one of many tools used to enhance the involvement of the community in such programs.

- ***Public Safety Education for the campus community.***

Not all campus public safety organizations do as much as they might by educating students, faculty and staff about appropriate use of callboxes and other public safety efforts. If callboxes are not being used, perhaps it is because *not enough has been done to educate the campus community on a regular basis in a variety of public safety roles. Pro-Active Community Disaster Education programs stress the need for continual repetition of public safety messages encouraging the use of safety methods, including callboxes and cell phones.* Advertisers know that getting their message out as often as possible through as many outlets as possible results in successful sales, so this lesson should be applied in public safety as well. This can be done through seminars, websites and *You Tube* video presentations, e-mail mass mailings, speaker's bureaus, advocacy groups and other creative environments.

- ***Campus Fire Safety Education programs***

One of the most popular programs that originated some years ago was a joint effort by the Fire Safety Coordinator of the Boulder Fire Department and the Residence Halls was annual fire safety training of resident advisors, and students. Participants were able to experience hands-on exercises with firefighters in fire prevention methods and techniques, which greatly mitigated some risky behaviors such as using candles and other high risk activities by students who had not previously been aware of the hazards.

*See Campus Fire Safety website:*

[http://www.bouldercolorado.gov/index.php?option=com\\_content&view=article&id=779&Itemid=371](http://www.bouldercolorado.gov/index.php?option=com_content&view=article&id=779&Itemid=371)

- ***Campus Safety Initiatives Coalition***

The UCB campus has a *Safety Initiatives Coalition* which is sponsored by student government, the Student Affairs Vice Chancellor, and the Department of Public Safety, et al, and actively reviews and promotes improvements which they feel will enhance public safety on campus.

<http://www.colorado.edu/safety/>

Over the years, their recommendations have included adding more phones in areas considered at risk, and adding improved lighting in such areas.

- ***Risk Management: Reducing exposure to liability with comprehensive rapid system emergency access***

*A risk management concern could be possible exposure to liability and subsequent litigation/negative public relations for the campus institution if it could be shown that a previously installed emergency safety system was inappropriately discontinued. Some higher education institutions are actually removing emergency callboxes, claiming that they are not widely utilized or cost effective to maintain. While each campus application is different, and has different demographics and crime/public safety methodology, there is a concern that such action could possibly adversely affect accessibility for the campus community to report an emergent situation in a timely manner should they not have a cell phone or other means of rapid communications with public safety. A large number of campuses throughout the nation now use the blue light callboxes, and thus a "de facto" standard for safety may have been established throughout the country, so discontinuing or reducing existing callbox systems could perhaps be construed as negligent.*

Most of the criminal activity on the UCB campus is perpetrated by individuals from adjacent areas such as Denver and suburbs, who may not be familiar with, or may not fear safety measures in place on the campus, so view the campus community as a ripe opportunity for exploitation.

Obviously, there are many intangibles which may not be able to be measured or proven as far as whether there is a positive effect on safety. However, in the interests of campus public safety where threats of terrorism, violence and crimes have become increasingly real, it could be easily argued that the exercise of due diligence would require the campus to offer adequate opportunity for "system entry emergency access" via blue light 9-1-1 emergency phones, good lighting in high risk areas, and related complementary safety measures.

- ***Low volume of calls on callboxes and prank calls do not justify removing callboxes or not installing them***

*A lack of a high volume of emergent calls reported via callbox is not a justifiable reason to downsize or eliminate the program entirely. Even if one assault, medical emergency, or other life safety event is managed through the use of the callboxes, their presence is well worth the investment and effort required to maintain and expand their presence for the campus community.*

Any effort to reduce or actually eliminate such systems could potentially threaten the safety and well being of the campus community, and serve as a possible greater incentive to criminals who take advantage of such deficiencies to perpetrate crimes. (e.g., assaults, bike thefts, burglaries, etc.)

Obviously there is no panacea that would ever eliminate the probability of such crimes or events. Everything that can be reasonably done to increase the deterrent effect and make the campus community feel safer (by knowing that such accessibility to emergency help is readily available to them at all times, whether they have a cell phone or not), is in my opinion and experience, worth the investment in time, effort, and funding required to implement such measures. The UCB administration evaluated those considerations long ago before committing to the high cost of installation, maintenance and support of the system in the interests of optimal public safety, so there was acknowledgment that the value of the system was justifiable and continues to be advocated and thus expanded.

The UCB callbox system was among the first in the nation to be implemented and has been studied and adopted by many other institutions since that time. The UC DPS with their campus public safety programs (including the then-new callbox system) was recognized some years ago by a major national publication for being the top comprehensive campus public safety program at that time.

There is much to be said for alleviating fear and apprehension for personal safety on the part of the campus community, and such devices not only provide measures of safety, but definitely contribute to a sense of well being by a largely pedestrian youthful campus community (which they have every right to expect).

Certainly there are down sides to the callbox phones, as with any such technology. Among those are false activations, and pranks, large installation and on-going maintenance costs, but a good public safety education program for campus community members can help reduce such incidents, and despite the comparatively minor annoyance and impact of false or prank calls, do not detract from the overall importance of providing such life safety links for the community.

Finally, I would recommend *surveying the students, faculty and staff* to determine their opinion of the callbox system and whether they feel more secure by having them installed on campus. If they are anything like UCB students, faculty and staff, I would predict a positive response to the presence of the systems.

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