



Why Don't Cops Use Cell Phones?

By [Bill Schrier](#) on September 9, 2010 11:46 PM

Police officers and firefighters carry \$5000 radios. Local and state governments spend hundreds of millions of dollars to build public safety radio networks. Yet, today, cell phone networks seem to be everywhere, most people carry a mobile phone and many of us think paying \$199 for an iPhone is expensive.



Why can't cops and firefighters and emergency medical technicians (EMT) use cell phones like everyone else? A Washington State legislator from Seattle [recently public argued for this approach in his blog](#). And, at first, this appears to be a simple way for governments to save a lot of taxpayer dollars.

Here are a few reasons public safety officers need their own dedicated networks:

1. Priority. Cellular networks do not prioritize their users or traffic. A teenager's cell phone has the same priority as a cell phone used by a police officer or, for that matter, the BlackBerry used by President Obama. We've all experienced "no circuits available" or "network busy" when using a cell phone. When I'm being assaulted or have been injured in an automobile accident or even have had my house burglarized, the last thing I want is to have the network be "busy" so a police officer or EMT couldn't be dispatched. Public safety needs dedicated frequencies where police officer and firefighters have priority and even, perhaps, exclusive rights to for use, without calls being clogged by the public.
2. Reliability. Seattle's public safety radio network, part of the larger [King County-wide 800 megahertz public safety radio network](#), handles more than 60,000 police, fire and emergency medical calls every day. It operated last year with 99.9994% reliability - that's about 189 seconds of downtime out of more the than 31 million seconds which composed the year 2009. On the average, only about five out of the 60,000 calls were delayed for any reason, and even then the average delay was about two seconds. What cell phone network has that kind of reliability? How many times have you experienced "no service" or "call dropped" with your cell phone? Do we want firefighters who are reviving a heart attack victim and talking to the emergency room on the radio to all-of-a-sudden have their call dropped? Or should police officers lose service when drunk drivers clog the roads and bars are closing at 2:00 AM because a cell phone company decides to do maintenance because "no one uses the network then"?
3. Disasters. Even small disasters cause cell phone networks to collapse. In Seattle, we've had swat team actions or car accidents which have shut down a freeway. Suddenly cell phone service abruptly ceases in that area because EVERYONE is on their phone. A few years ago a rifleman was loose and [shooting people in Tacoma Mall](#). Responding police and EMTs had communications because they had dedicated networks and frequencies, but again cell phone networks were overloaded and down. In a larger disaster such as an earthquake or hurricane (with associated evacuation of large cities), commercial networks will be overloaded or jammed for days by people trying to escape the affected areas. Do we want police and fire departments - or even transportation, electric utilities and public works departments - to be trying to use those same networks while they are are responding to the disaster? I don't think so.

4. Talk-around. A key feature of most government-operated networks is something called [talk-around or simplex or "walkie-talkie" mode](#). In this mode, individual radios talk directly to each other, without using a radio or cell tower. This is very important at incident scenes - firefighters commonly use it at the scene of a fire, because the radios will operate at the scene even if there isn't a tower nearby. But this NEVER a feature of cellular phone networks. If the cell tower is down or out of range, that cell phone in your hands is a useless lump of plastic. But the radios of public safety officers still work and will talk to each other even without the tower.
5. Ruggedness. No firefighter in his/her right mind would fight a fire using a cell phone for communications. The heat, water and ruggedness of the environment would quickly destroy the device. Yet most public safety radios will survive being dropped repeatedly on the ground or being immersed in water for 30 minutes or more. No standard cell phone can survive the rigorous work of firefighting or policing.

Are there problems with the current dedicated public safety networks? Absolutely. The use proprietary technologies, for example "[Project 25](#)". Theoretically all "Project 25" radios work on any "Project 25" radio system. But only a few of those are deployed around the nation. These proprietary technologies are one reason the radios cost up to \$5,000 each.

Representative Carlyle, in his blog, proposes that we deploy "Tetra" radios for public safety. While Tetra is common in [some parts of the world](#), it is not used at all in the United States. This is a dangerous proposal, because it means Tetra networks we buy would not work with the equipment used by any other government or telecommunications carrier anywhere in the United States. If called to respond to a disaster overseas, we could talk to [firefighters in Hong Kong or the police in Ireland](#), however.

Another problem we face is the small market - the total market for public safety is perhaps 10,000,000 radios which are replaced, say, once every 10 years. On the other hand, the cell phone market is huge - 260 million cell phones replaced every two years in the United States alone. The economies of scale means consumers will have a lot more choice, and their cell phones will be relatively cheap.

So is there some way to reduce the sky-high cost of these dedicated public safety networks while at the same time not endangering cops, firefighters, EMTs and the public in general?

Absolutely. The FCC, in its [national broadband plan](#), and the federal Department of Commerce, with its [forward-thinking grant program for broadband](#), are lighting the way for a new public safety network which will be more robust, national in scope, and interoperable. By "interoperable" I mean the new public safety equipment will probably operate almost anywhere in the nation, whether on a dedicated government network or on a commercial cell phone network. Here are some features of the new networks:

- The FCC and [major public safety organizations](#) have called for the new public safety networks to be built using a fourth generation (4G) technology called LTE - long-term evolution. Not coincidentally, this is the same technology which will be used by the major cell phone companies Verizon and AT&T when they construct their 4G networks. The commercial networks will operate on different frequencies than the public safety networks, but they will all be built in same general area of the wireless spectrum - the 700 megahertz (MHz) band.
- Because they are all using the same technology (LTE) and are in a similar slice of radio spectrum (700 MHz) potentially they will all interoperate. That means that public safety officers will use the government networks and frequencies when they are within range, but could "roam" to a commercial network if necessary. So cops and firefighters will have the best of both worlds - coverage from dedicated government networks and coverage from multiple private carriers. The FCC is even considering rules which would require the commercial companies to give public safety priority on the commercial LTE networks.
- Because everyone - consumers, cops, firefighters and even general government workers such as transportation and utilities - are all using LTE, constructing the networks can be much cheaper. Commercial telecommunications carriers could put government antennas and equipment at their cell sites, and vice-versa. Perhaps the network equipment at the cell site, or even the central

switches could be shared as well. Public safety will still be using its own frequencies and have priority, but could share many other network elements.

- And the radios used by individual public safety officers or placed in police vehicles and fire trucks can be much cheaper as well. Because manufacturers are all making equipment for the same technology - LTE - it could cost just a few hundred dollars. Again, there will be specialized and ruggedized devices for firefighters and others working in punishing environments, but the "innards" - the electronics - will be much less expensive.
- Next, we have to get all first and second responders to use the same or common networks. Here in Washington State, for example, we have multiple overlapping and duplicate networks. City and County police and fire in the region have one network, each electric utility (e.g. Seattle City Light) have another network. Transportation departments have their own networks (e.g. Seattle Transportation and Washington State Transportation each have their own separate network). The Washington State Patrol has its own separate network. The State Department of Natural Resources has its own network. Fish and Wildlife has its own network. And federal government agencies (FBI, customs and immigration) have their own networks. This is patently stupid and expensive. As we build these new fourth generation LTE networks, we need to build a single network with lots of sites and a lot of redundancy and hardening to withstand disasters. And everyone - first and second responders from all agencies - should use it.
- Finally, and perhaps most importantly, all the networks will be nationally interoperable. The lack of communications interoperability was a major finding of the [Commission which investigated the September 11th](#) World Trade Center attack. But with these new networks, a Seattle police officer's 4th generation LTE device will also work on New York City's LTE network or New Mexico's :LTE network or on any Verizon or AT&T network anywhere in the nation. As disasters happen anywhere in the United States, and first and second responders are rushed to the scene of the disaster, they can take their communications gear with them and it will work.

The City of Seattle is one of a handful (about 20) forward-thinking governments leading the way to deploy these new networks. Seattle's public safety LTE network, [hopefully launched with a federal stimulus grant](#), will eventually expand throughout the Puget Sound region and across the State of Washington. The State of Oregon also has authority and a [grant request to build an LTE network](#), and we are working with Oregon to make sure our networks work with each other seamlessly.

Is all of this a pipe dream? I don't think so. A number of public and private companies, governments and telecommunications carriers and equipment manufacturers [are working together](#) to realize it. Many of them are in the Public Safety Alliance. In the Federal government, the FCC is working with the [National Institute of Standards](#) and the Departments of Commerce and Homeland security are providing [grant funding](#). It will take a lot of work and many years to realize this network.

But when it is finished, we'll have public safety networks which work to keep us safe, and consumer networks which work to keep us productive and linked to our friends and families. These networks will be separate yet connected. They will be built from common technologies. And they will be less expensive for taxpayers than the networks we have today.

Tags: [700 MHz](#) [Dow Constantine](#) [firefighters](#) [King County](#) [law enforcement communications](#) [Michael McGinn](#) [new radio network for Seattle](#) [P25](#) [Seattle](#) [TETRA](#)