

From the Magazine: Sharing Proves Key to Successful Public Safety Network

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In 2012, Congress passed the Tax Relief Bill that included, under Title 6, allocating the 700-MHz D Block to the existing Public Safety broadband spectrum giving Public Safety a nationwide license for 20 MHz (10X10 MHz), setting up an independent board to build and manage the network (FirstNet), and allocating \$7 Billion to fund the network from future spectrum auctions. That \$7 billion is not nearly enough money to build out this network, which is being planned to cover as much of the populated areas of the United States as possible, and then using satellite communications to provide coverage to what is being called 100 percent of the states, territories, and tribal areas.

The law also provides for public/private partnerships so that public companies can help fund the network build-out and operations by leasing unused spectrum from the Public Safety community. Some of those designing this network believe that even in the major metro areas there will be excess spectrum that can be used by commercial operators on a secondary basis. By secondary, I mean that if Public Safety needs all of the network capacity in a given area for an incident, it will have the ability to pre-empt any other traffic on the network and take control of the entire spectrum. I have my doubts about the amount of spectrum that will really be available to secondary users in the major metro areas, but it is clear that under normal conditions there will be spectrum available in suburban and rural areas.

The idea that the Public Safety spectrum (band 14) could act as spillover LTE spectrum for commercial networks appears to be a win-win for both Public Safety and commercial network operators. Care will have to be taken when setting up the agreements between the network operators and FirstNet. How many commercial users can the network support while still providing primary data and video services for the Public Safety community? How many commercial network operators will share the spectrum in key metro areas? What will the impact on cost be for the commercial operators to have devices that are capable of band 14 services? These questions will have to be reviewed and answered by the networks and FirstNet, and allowances will need to be made for increased Public Safety usage over time. As more Public Safety applications come online and as more first responders come onto the network, the greater the percentage of the total capacity they will need.

The good news for the commercial operators is that Public Safety usage patterns will be the reverse of commercial users. That is, commercial networks send more

data and video down to devices than users send back up to the network. In the Public Safety environment, it appears that most of the data and video will be sent from the field devices back to the network so it can be shared with dispatch centers and incident commanders. Another point in favor of this type of network sharing is that during normal patrol activities, the network will not be heavily loaded, and when there is an incident (typical daily types of robberies, hostage situations, traffic accidents, etc.) it will be limited to a single cell sector or a couple of cell sectors and access to the network over a larger area will not be adversely affected.

In rural America, where network operators struggle to find a business model that will make it practical to build commercial networks, the private/public aspect of the Public Safety broadband network will be a bigger win for both parties. Networks can be built in areas where they were never before economical; there will be more spectrum for the commercial operators to use; the percentage of time the network will be available to their customers will be much higher; and with cost-sharing, commercial customers should have access to LTE for mobile as well as fixed, in-the-home and office usage. By the way, this was one of the “selling points” we used when talking to members of Congress about reallocating the D Block to Public Safety. Many in Congress have districts where a large percentage of the area is rural and their constituents do not have access to any type of broadband service today. Many of the commercial operators already have assets that can be used for the Public Safety network, and backhaul to and from these sites will be less expensive for both parties if it is shared between multiple organizations.

Commercial operators need more spectrum and cannot wait the 4-5 years it will take for the FCC to auction and clear new spectrum. Public Safety needs to build this network as quickly as possible. The fact that public/private partnerships have been authorized by the law, and that spectrum is a scarce resource should work to everyone’s advantage as the network is being deployed. FirstNet has stated that it envisions a dual build-out approach, building out metro and rural areas at the same time. As a result, extending broadband into rural America just became easier for commercial operators, and in metro areas there is the possibility that some of the LTE traffic on the commercial networks can be offloaded to this network during times of commercial network congestion.

However, it is important for commercial operators to understand that they are leasing spectrum from the Nationwide Public Safety Broadband Network that may not always be available. FirstNet holds the license and Public Safety is FirstNet’s primary customer. Therefore, Public Safety will have access to the spectrum even when secondary users will not. The reason Public Safety needs its own data and video network is because during major incidents commercial networks tend to

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become overcrowded with too many demands for service and not enough capacity to go around. Using the Public Safety network, Public Safety users assigned to an incident will have full priority and true pre-emptive access to the network. Even with this caveat, commercial network operators that partner with FirstNet will end up with access to this spectrum most of the time.

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