

# D-Block: Utilities' Long- Awaited Smart Grid Spectrum



Congress wants to build a nationwide public safety wireless network, and utilities will be allowed to share.

JEFF ST. JOHN: MARCH 21, 2012

Last month, U.S. utilities won a long-fought lobbying push for a piece of radio spectrum that could serve as the backbone of a nationwide public safety and smart grid system.

The spectrum in question is called “D-block,” a 10-megahertz band in the 700-megahertz spectrum. A small addition in a payroll tax holiday bill Congress passed last month allows utilities to partner with public safety providers in using the D-block spread, adding it to the current 10-megahertz public safety band. It also directs \$7 billion in federal backing to the cash-strapped state and local agencies that will be looking for funds to buy the radios and build the networks to deploy it.

That’s nice, but it’s not enough money to do the job, says the Public Safety Spectrum Trust, the organization set up to manage the program. Estimates of the cost of initial deployment are about double that amount, and individual regional projects launched so far have ranged from \$25 million to \$100 million-plus apiece.

That’s why public safety groups want utility cash to roll out the technology -- and the new law allows them to do just that, by letting them form partnerships to build the network. It will take months for the new spectrum to be ready for use, of course. Even so, states including Nevada and Michigan have seen utilities and public safety partners lay out plans for

new communications deployments that assume that they'll be legally allowed to share networks.

That means brand new smart grid markets, according to Mark Madden, regional vice president of North American utilities for Alcatel-Lucent. The French networking giant already has done a lot of mixed smart grid communications in the U.S., including microwave and 4G WiMAX. Now it's talking with unnamed utilities about using the new D-block spectrum, he said.

"What we're putting together is LTE for utilities and for public safety," he said. "Because of the wide-ranging quality of service differentiation that can and must be done for public safety, we have a perfect match between the two. [...] In the event there's a public safety emergency, the utility does not have to be cut off." While he wouldn't name prospective customers, he did describe "a significant pent-up demand to be able to build up ubiquitous field-area networks for utilities."

At the same time, we're seeing the telecommunications giants getting involved. Verizon Wireless and Motorola Solutions launched a public-safety-oriented partnership in early 2011, and AT&T and Harris beefed up an existing partnership for first responders in October, with plans to deliver products in mid-2012. Amidst the competition, we're seeing a resurgence of the private (utility-owned) vs. public (carrier) networks debate, with both sides saying they're ready to deliver the always-on capabilities that first responders -- and utility partners -- demand.

It's going to take awhile for the new program to be set up. The Utilities Telecom Council, the industry's main voice in Congress, has for years been asking for a slice of spectrum from the public safety broadband network to use for the smart grid. The Federal Communications Commission's 2010 National Broadband Plan actually recommended that Congress give utilities what they wanted, but it's taken two years to get it passed into law.

The law sets up the First Responder Network Authority, or FirstNet, as an independent authority within the National Telecommunications and Information Administration (NTIA) to hold the license for the new public safety spectrum. FirstNet is expected to raise more than \$26.6 billion in proceeds from auctioning them off, if it's to receive \$200 million in additional federal support. What's more, only \$2 billion of the \$7 billion in grants will be immediately available -- the rest relies on the auctions bringing in enough money.

Another issue is that states have the option to opt out of the nationwide network plan, and some that already have regional networks in place may well choose to do so, said Brett Kilbourne, vice president of government and industry affairs for the Utilities Telecom Council. Until that process has taken place, it will be hard for FirstNet to proceed.

In the meantime, we'll be seeing lots of development work on this front, starting with municipal utilities talking to their own police and fire departments, and spreading to broader partnerships between investor-owned utilities and their public safety counterparts. After all, Kilbourne said, public safety agencies have good reason to keep in close contact with utilities, to make sure that the power has been cut off on a downed power line, that water's running to fire hydrants or that gas is cut off to a building that's on fire, to name a few examples.

LTE will be the technology for the network, which offers a far more sophisticated set of capabilities than those public safety has traditionally used for its existing 10-megahertz band, he said. Those include multiple layers of priority access in the network, aimed at satisfying utilities' always-on demands. The National Institute of Standards and Technology (NIST), the federal overseer of smart grid standards, will also support the D-block rollout.

"The bottom line here is, this is good news for utilities, because we didn't have anything that would meet our needs before, and now we do," Kilbourne said. The D-block offers some important technical advantages in terms of its range and penetration characteristics. Just as importantly, it can be reserved for private use, which adds to reliability and quality of service.

In fact, smart meter maker Sensus uses its own privately held 700-megahertz spectrum to connect its meters. That allows for far fewer communications links than the mesh networks used in most other North American smart meter deployments.

Utilities have been saying for years that they need their own spectrum to secure themselves against disasters, saying their own networks have proven more reliable than public networks through crises like Hurricane Katrina. Cellular providers insist they're ready to provide utilities with the quality of service terms -- availability in emergencies, most importantly -- to support ever more critical grid functions.

Vendors have responded by putting their feet in both camps, by adding cellular options to private radio networks and vice versa, as Silver Spring

Networks has done, or buying the most prominent cellular smart meter networker out there, as Itron did when it acquired SmartSynch for \$100 million earlier this year.

But D-block use is likely destined to be for a different set of smart grid priorities -- mainly, linking the increasingly complex and fast-acting gear that makes up distribution automation systems. Unlike smart meters, these capacitor banks, switches and reclosers, line sensors and regulators and other gear require always-on communications and latencies in the range of 100s to 10s of milliseconds.

At the same time, utilities want voice, data and video connectivity to their substations and work trucks to connect security cameras, networked laptops and handheld devices and other smart grid support. That's going to require much higher bandwidth than the mesh networks deployed for most of North America's smart meters -- and it often has to extend to remote substations and stretches of the grid where public network coverage is spotty or nonexistent.

All in all, D-block is an attractive opportunity to solve most, if not all, of those problems. Next up will come partnerships, ready to bid enough money on the next auction to keep federal support flowing. Stay tuned for more developments --and watch for the public-vs.-private-networks debate to rear its head again in this emerging market.

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