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# Utilities explore wireless backhaul for meter makeovers

Aug 20, 2009 9:56 AM, By Sarah Reedy

Like many utilities, APS is using wireless backhaul to power its statewide advanced meter infrastructure rollout

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Amongst a host of necessary new decisions, utilities beginning to roll out advanced meter infrastructure (AMI) must choose from building their own network, [partnering with a telco](#) for use of theirs or [working with a middleman](#) that does the network aggregation for them. In most cases, it comes down to a technology choice of whether fixed wireless, fiber, leased line or cellular data makes the most sense to power their future [smart grids](#).

The once-standoffish Federal Communications Commission is even getting involved in the smart-grid infrastructure debate. It [recently appointed former venture capitalist Nick Sinai](#) as Energy and Environmental Director, charged with the task of examining how broadband and communications infrastructure and policies can support national energy and environment goals, particularly the smart grid. What Sinai and the FCC decides will determine the regulations for utility companies using wireless spectrum and broadband access technology as well as determine what broadband's role will ultimately be in smart grids.

In the meantime, utilities are already making their own choices about what infrastructure makes the most sense for them. For many utilities, wireless backhaul, [by way of machine-to-machine \(M2M\) wireless data](#), is becoming a popular technology for supporting IT-enabled smart meters, and eventually the entire smart grid. This is primarily because utilities need an infrastructure that is ubiquitous across all the households they serve, and in most cases existing wireless infrastructure is already in place, according to Teresa Mastrangelo, principal analyst with BroadbandTrends. Wireless infrastructure is also secure  it's not running over unlicensed spectrum  and it's more flexible than fixed options.

One thing that I hear a lot from broadband equipment providers is they think that utilities will

go out and build fiber-to-the-home networks for AMI infrastructure, and I'm not seeing any indication at this phase that that is ever going to happen," Mastrangelo said. "Then there is a lot of talk about them partnering with other telco operators who have primarily fixed infrastructures to utilize that. I'm not seeing any evidence that that is occurring either, except in an unregulated market like we're seeing in Texas with [TXU](#)."

Wireline broadband is another option some utilities are exploring. Qwest Communications, for example, [recently partnered with Current Communications](#) on a smart-grid offering for utility companies that combines Qwest's DSL network with Current's broadband-over-powerline (BPL) technology, currently in trial with Xcel Energy in Boulder, Colo. The main problem with broadband, as evidenced by the [broadband stimulus fund debate](#), however, is it lacks ubiquity. Until every consumer served by a utility has a broadband pipe going to his or her home, broadband will not be a reliable option for AMI, Mastrangelo said.

"[Utilities] face the same issue in terms of rural customers as a telco does," she said. "They are harder to serve, but unlike a telco and broadband service, that utility still has to provide electricity to that customer. There are different levels of sophistication, but right now [wireless] appears to have the largest amount of activity."

## HOW APS IS USING WIRELESS TO TRANSFORM METERS

One company that recently went through the AMI decision process and ultimately settled on wireless is Pinnacle West's Arizona Public Service (APS), Arizona's largest electric utility. The company serves electricity and energy-related products and services to more than 1 million customers in 11 of Arizona's 15 counties. APS has been installing PowerOne Data's AMI metering since 2007 and has installed approximately 160,000 P-1D smart meters to date. As of late 2008, it also committed to deploying an additional 800,000 Elster-made meters with plans to finish rolling these out in the metro area by the end of 2012, according to Jasbir Arora, manager for AMI at APS.

After considering all the alternatives, APS chose cellular GSM for its transport because it was ubiquitous and promised a better price, performance and time to market, Arora said. APS had three distinct goals for the infrastructure. It had to be one that can read meters wirelessly, didn't require batteries and one that was self-healing. The battery rationale was simply because of the high temperatures in Arizona that would mean constant maintenance and short life spans, Arora said. The wireless, self-healing network requirement was designed to make the process as hands-off for APS as possible "wired networks require more maintenance, he said, and they also require permission from customers to install the telephone line. A self-healing network would maintain itself as more and more meters were added, Arora said.

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