

Consider building data, topography and more when building out smart-grid networks

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LAS VEGAS — Utilities investing in wireless infrastructure to support automation and distribution of electricity across regional grids must preplan and beta-test networks before the first node is installed in order to ensure its reliability and efficacy, a step many organizations skip, said Drew Lentz, business developer for EDX Wireless, during a 2011 International Wireless Communications Expo session about smart-grid technologies.

Lentz said utility decision-makers need to consider network reliability first and foremost when building out a network. This includes purchasing information about their region, including the height of buildings, the types of building materials used and the area's topography, to determine how to build out the network. The information then can be used to determine the line-of-site issues that may not meet the 100% reliability needed for two-way communications used for applications such a meter reading. Something as simple as a tree growing several feet can affect the network, so multiple layers of information must be considered before the first node is installed, he said.

Oftentimes, utility decision-makers — who are not technologists — assume networking planning in not required because of a specific technology used, for example, a mesh network. In addition, network developers may not take advantage of the data available that can help them successfully build out a smart grid network. Instead of using a combination of data — such as clutter, GIS and building data — they judge the network needs solely on the type of topography involved in the coverage area.

“All it is people not going out to dig for and use the information that is available,” Lentz said in an interview.

[EDX Wireless](#) can help in this area, Lentz said. The company's software suite can assist utilities with building out a network by layering multiple pieces of information that can determine the best network design. Specifically, the software lets users load multiple layers of information, from the terrain, building, street to pole data.

“For example, if you are building out a mesh network, one of the things is how many hops it takes from the master node to the child node and the distance between the poles,” he said. “Our software allows you to specify the hop count, so you know how many hops that information is going to take before it gets to the end point.”

In addition, utilities may not have to purchase building data per square mile — information Lentz said can cost upwards of \$20,000. Instead, the software can use general terrain and GIS data and then the embedded clutter tool determines areas of interference.

“The software can find those vulnerabilities before you even deploy it,” he said. “Then you can run scenarios, like a drunk driver hits a pole and then simulate that node going down to find out how the rest of the network will be affected.”