



# INFORMATION BULLETIN

From the UTC Legal/Regulatory Department

---

February 2, 2011

## **The Truth About Utility and Other Critical Infrastructure Industry Telecom Capabilities and Needs**

As utilities and other critical infrastructure industries (CIIs) move forward in the development and deployment of smart grids, marketing ploys that misrepresent their capabilities and needs have been implemented that are designed to skew both decision making and regulatory oversight. The marketing ploys ignore the fact that CIIs will ultimately choose to build their own networks or buy telecom services based upon technical requirements, costs and levels of service required. CIIs have and will continue to utilize others to provide telecom services for certain aspects of their operations and smart grid deployments based upon these criteria. For many of the reasons identified in this paper, CIIs will meet their telecom needs by expanding their existing networks. As described below, the rhetoric which has been introduced into the marketplace tends to understate the real capabilities of utilities and other critical infrastructure industries and overstate the capabilities of others. UTC has separated fact from fiction in the Q&A below.

### ***Why are critical infrastructure industries “building out communication networks from scratch” when there are “existing providers that know how to operate complex networks”?***

Critical infrastructure industries are generally not building networks “from scratch” and are in fact experts in operating complex networks, the electric grid being a prime example. In reality, CIIs have been developing their own telecom networks since the late 1890s using telephone to remote hill top reservoirs, mobile radios in vehicles starting in the 1940s, digital equipment in the 1970s, fiber optics in the 1980s and advanced mobile radio systems in the 1990s. Upgrading our systems to meet the existing and new requirements for modernization of the grid and other CII networks is clearly within the technical expertise of CII telecom experts. Moreover, CIIs need a level of service, coverage and reliable communications that communications service providers often cannot provide, especially during hurricanes and other emergencies that require restoration of essential electric, gas and water services. As CIIs implement smart grid and other advanced infrastructure delivery systems, they will need to enhance these communications networks and make them even better. While CIIs will also likely increase their use of carrier-provided services where appropriate, they will

continue to primarily rely on their private internal networks for mission critical communications. This balanced approach better ensures continuity of service and the safety of our field crews on a cost-effective and efficient basis.

***Can utilities and other critical infrastructure industries rely on telecom service providers to meet their disaster recovery needs?***

While it is argued that carriers' disaster recovery plans have networks operational within 48 hours, that's 48 hours too long for utilities and other critical infrastructure industries. Utility networks, typically have at least 8-12 hours of battery powered backup for their own communications facilities and uninterruptible and virtually indefinite generator backup when battery back-up is depleted. Moreover, utilities are reluctant to be dependent upon carriers to restore service when it goes down. CII networks often remain operational when carrier networks have gone down and often restore communications faster than carriers. For example, following Hurricane Katrina, *USA Today* reported that "for the first 72 hours [the private network run by SouthernLINC Wireless] radios were virtually the only ways to communicate on Mississippi's Gulf Coast." *RCR Wireless News* reported, nearly one week after Hurricane Katrina struck, that one carrier stated "that it has more than 500 generators ready to be dispatched as soon as conditions allow..." *Katrina Panel Final Report* stated that restoration of commercial communication services in the Gulf Coast region was further hampered by the extensive damage and destruction suffered by wireline backhaul facilities, including transport lines, central offices and switches. The *Senate Committee on Homeland Security and Government Affairs' Report on Katrina* stated that "Mississippi Power relied on its only viable form of communication – its internal system Southern Linc Wireless. This system was designed with considerable redundancy and proved reliable despite suffering catastrophic damage."

***Why not use cellular systems that cover 95+% of Americans?***

Utilities and other critical infrastructure industries need wireless communications that cover their entire service territories, not just the most populous areas. So, when the top mobile communications service providers claim they cover 95+% of *Americans* that doesn't mean they cover 95+% of *America*. Instead, this translates into only about 50%-60% of the geography of the United States. This lack of geographic coverage leaves huge areas uncovered, generally the areas which are either sparsely populated or where utilities and other critical infrastructure industries build power plants, run transmission lines and locate other critical infrastructure facilities. Consequently, the coverage falls significantly short of meeting many of CIIs' operational and smart grid needs. Additionally, many CIIs cover vast geographic regions, with service territories covering multiple states or entire regions. Using public networks often requires use of multiple carriers, forcing CIIs to rely on often incompatible wireless networks and incur additional operational costs in managing the multiple contracts. But at the heart of the issue is the fact that their claims regarding coverage do not override primary CII considerations for reliability, coverage, and cost.

### **Can utilities and other critical infrastructure industries handle changing technologies?**

While electric, gas and water utilities don't provide consumers with new meters every two years the way that most wireless service providers sell new cell phones to their customers, they are not subject to the same kind of market forces. Regardless of how rapidly technology evolves, smart meters and other devices must continue to meet their utility requirements long after cellular providers have cycled through the latest innovations. The CII need for longer technology cycles stems from not only internal and state regulatory policies aimed at keeping consumer costs low, but the need by CII to introduce technologies in a way that maintains the safety and stability of the electric grid and other networks. The successful transition of critical infrastructure industries from plain old telephone technology to mobile radios to digital equipment to fiber optics to advanced mobile radio systems shows that we not only understand how to handle changing technologies, in many respects **we've led the way.**

### **Are cellular carriers better able to handle the bandwidth and response time for utilities applications?**

Some detractors claim that carrier-provided wireless networks have greater capacity than utility and other CII networks and that is generally true. However, they also have more subscribers to support and their networks are designed to meet certain predicted levels of demand. However, these parameters may be exceeded during emergencies when everyone in a given area is trying to access a single cellular site. In major and widespread emergencies, demand may exceed capacity on the entire network. Either way, calls can't get through. While wireless service providers can provide priority access and priority restoration to utilities, these options don't always meet utility critical restoration needs or our requirements for immediate communication rather than just a priority. Restoration times can be slow--even with priority--and access to a network is only as reliable as the network it is on. If the network is down, priority access doesn't make any difference. For smart grids in particular, CII need to have faster communications. For example, keeping the electric grid in balance often requires high-bandwidth with faster response times of just a few milliseconds, generally known as low latencies. Even some midrange smart grid applications, such as distribution automation, require sub-50 millisecond response times. Unfortunately, current cellular technology has latencies of several 100s of milliseconds or higher.

### **Are communications service providers better able to maintain cybersecurity?**

Some detractors complain that communication service providers are better able to maintain cybersecurity of CII communications networks. While commercial service providers do support secure communications for government and financial industry customers, providing security for CII is a distinctly different proposition. Unlike serving a single building or institutional customer, utility and other CII networks are more dispersed and include remote areas that may not be served by commercial carriers. Moreover, outsourcing cybersecurity to a carrier creates additional vulnerabilities by virtue of handing control over to an external provider that may or may not meet utility industry standards for security, both in terms of physical security (e.g., background checks of personnel, etc.) and cybersecurity (e.g., secure software, etc.). Electric

utilities must comply with NERC CIP (North American Electric Reliability Corporation Critical Infrastructure Protection) and face penalties of up to \$1 million per day, per violation.

**Final Thoughts:**

UTC supports the ability of its members to choose the technologies, vendors or applications that best support their ability to meet the demands of critical infrastructure industries. Utilities and other critical infrastructure industries have been building and implementing telecom networks for over 100 years. These networks have been designed to meet their historic requirements and are undergoing expansion to meet the broad range of utility and other critical infrastructure industry needs in the future.

One question that was not addressed in this article is the question about cost. There are allegations that some technologies are less expensive than others. For all CII, the question of costs and benefits is always important but is considered in light of the technical, operational and reliability requirements. The bottom line on costs is that all utilities and CII must continually justify their expenditures. For regulated utilities, state regulators and consumer advocates review utilities expenditures before they are included in rates. For unregulated utilities and other CII, there are city councils, cooperative boards of directors and shareholders that will question investments that are not the most cost-effective solution.

Despite the rhetorical back-and-forth, UTC sees a bright future for CII / commercial carrier partnerships as utilities and other critical infrastructure industries modernize their systems and deploy smart grids. But these partnerships must be built upon carriers meeting the technical and regulatory requirements for the specific applications they wish to support, not over-generalizations that they can “do it all.” They must be cost-effective and recognize not only our ability to build these systems by ourselves, but also our willingness to become trusted partners in joint projects. And maybe the most important factor, there must be a level of trust that whatever option is used, the network will meet the stringent reliability and service restoration requirements that all critical infrastructure industries need.

For more information contact Mike Oldak, VP & General Counsel, UTC, 202.833.6808 or [Mike.Oldak@UTC.org](mailto:Mike.Oldak@UTC.org)