



Electricity and Telecommunications Nexus Could Mean Increased Costs for Utilities

Paul A. DeCotis

[With this issue, we welcome Paul A. DeCotis as a columnist on electricity matters. As his biography shows, Paul has far-reaching experience in electric regulation.—RW]

For decades, utilities have relied on the public-carrier telecommunication provider services to monitor and control their transmission and distribution systems.¹

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Such services had been economically priced, reliable, and able to connect to remote areas of

the system. Technology has evolved as utility systems have grown to meet demand and have become more decentralized. As a result, information technology and applications are forcing greater dependence on more circuits, moving from small interdependencies and connectivity for simple SCADA (supervisory control and data acquisition) to needing larger amounts of bandwidth and more location points to facilitate all of the Smart Utility applications, including Smart Metering, Distribution Automation, Intelligent Substation Automation, and Security.

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TELECOMMUNICATIONS INDUSTRY OVERHAUL COULD DRASTICALLY AFFECT ELECTRIC UTILITIES

The Telecommunications Act of 1996 was the first major piece of legislation ushering in a new era of change. The goal of the act was to open the market to competition and spur technology innovations, letting anyone enter the communications business. In hindsight, the act changed the way we work, live, and play. It spawned a whole new era of cellular and wireless services and improved connectivity, and the way people and systems communicate.

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The Federal Communications Commission (FCC) promulgated market rules that were fair, unbiased, and enticing for new business start-ups and innovation. The communication networks fostered by the act have become the foundation upon which utility systems operate today. These networks monitor and control the reliability and security of our networks, inform and improve utility outage management systems, and speed restoration. Since the disruptive cellular technologies gained traction and market share, landline plain old telephone service (POTS) has suffered greatly.

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The number of POTS lines and commercial data circuits running on the Public Switched Telephone Network (PSTN) is declining by double-digit percentage each year. At this rate, it is only a matter of time before POTS disappears. The estimated revenue from these aging networks is 20–25 percent of what it was at its peak prior to ubiquitous cell phone coverage.

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As it now stands, major carriers have expressed to clients their intention to phase out service completely in the coming years, and carriers who would not commit to a schedule last year are now starting to talk openly about 2020 as the year of death for the PSTN. Given that many manufacturers making core backbone switches have already stopped manufacturing them and key personnel supporting PSTN and POTS continue to retire, it appears the imminent end of PSTN might be sooner. As a result,

previously inexpensive, reliable circuits will no longer be available or supported by major telecommunications carriers like AT&T and Verizon.

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The FCC is studying and looking to facilitate regulatory changes to honor the telecommunications “customer compact” that the public has come to expect from the carriers. Most recently, FCC Chairman Tom Wheeler released a fact sheet outlining proposals to protect customers and promote competition in the coming transition. If mission-critical applications like utility relaying, special services for the handicapped, and service to rural areas rely heavily on these networks, regulatory agencies need to ensure that POTS carriers maintain PSTN systems until a reasonable migration of systems is in place.

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Providing these services is part of carriers’ obligation to maintaining Universal Service Fund (USF) subsidies and is enforceable by state regulators. However, carriers are lobbying hard to eliminate this obligation, offering instead to provide enhanced services with the new wireless and packet networks. More than a dozen states have already eliminated the Carrier of Last Resort (COLR) provision from their regulatory requirements. Many other states are in the process of eliminating COLR provisions or have proposed legislation to allow them to eliminate services as they become obsolete. In either case, the uncertainty caused by coming changes and the potential impact on telecommunications

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The alternative to the POTS lines is to convert them to more expensive and larger T1 circuits or Multiprotocol Label Switching (MPLS) circuits over bonded T1s that can handle Ethernet traffic and other protocols. However, in a December 2014 update to AT&T's General Provisions of its *Business Service Guide*,² the company added a section labeled "GP4.1.—Withdrawal of Service Matrix." In this section, AT&T states that in addition to the POTS lines, they will withdraw all non-Ethernet private lines, which include DS0s, T1s, DS3s, on up to OC48s. This means that utilities upgrading to T1 or greater copper circuits will have less than five years to find yet another, more expensive solution.

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SUBSTANTIAL CHANGEOVER COST LOOMS


As an example, two years ago a large investor-owned utility (IOU) with approximately 4,000 PSTN circuits began to convert the smaller circuits to commercial T1 lines. The purpose was to aggregate the lines servicing substation locations into a single feed of service from the commercial carriers, because that kind of service was the only one offered that could meet the stringent requirements and Service-Level Agreements the utility applications required. Given this most recent change by the carriers to include elimination of all circuits that are non-packet-based, T1s included, this IOU had to look to other even more expensive solutions

like carrier MPLS over fiber or their own private deployment of fiber for these mission-critical applications.

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Fire and police departments, security firms, and others will soon join the utilities in converting their telecommunication systems to their own private networks, or carrier wireless and fiber systems, delivering packet-based services. Utilities represent a mission-critical service that uses analog and larger circuits to collect field information to monitor and control the efficiency and reliability of the electric grid. With hundreds of millions of dollars in legacy equipment on the electric grid that uses serial analog connections, conversion to these packet networks can be a costly undertaking. However, there are interim steps to leverage some of the legacy equipment over modern packet-based networks.

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Planning and budgeting for replacement of telecommunications networks should be strategic and deliberate to accommodate solution development, conversion, testing, and cutover. The time to plan and budget is now. 

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NOTES

1. Dan Belmont, senior director in the Energy & Utilities Practice at West Monroe Partners, LLC, was a significant contributor to this column.
2. AT&T. (2014). *Business service guide*. Retrieved from http://serviceguidenew.att.com/sg_CustomPreviewer?attachmentId=00PC000000i45m0MAA.