

# If Competition Won't Build the NII, Utility Partnerships Will

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Now that the Telecommunications Act of 1996<sup>1</sup> has put in place a “pro-competitive, deregulatory national policy framework,”<sup>2</sup> the time has come to bring the promised new National Information Infrastructure (NII) into being.

Unfortunately, the task of building a “door-to-door” national fiber optic network is languishing, although its crucial importance to national economic leadership was a prime slogan for telecommunications reform not so long ago. The technology of choice—switched broadband fiber—has mutated into the technology of convenience and economy—wireless—and the laudable goal of “door-to-door” universal service (once a marker for national self-esteem) has fallen into a regulatory almost-neverland.<sup>3</sup>

My hunch is that, when and if that urgently-needed new broadband infrastructure ever gets built, it will be no thanks to the master plan we just adopted.

## Losing Out, Big Time

While arguments for broadband over narrowband approach theology, there are immensely practical

reasons to build broadband networks. While cellular and satellite radio can deliver highly versatile service, wired broadband has precision and virtually infinite capacity and is immune to interference from weather, traffic, and electromagnetic radiation. (And cellular systems need a hard-wired broadband “backbone” to function best anyway.) Technically, broadband fiber is far superior to any other telecommunications medium, and most experts think its performance is well worth the extra cost.

Expense is the undoubted problem, especially if the public insists on service being affordable and universal. At no less than \$1,000 per household—for many residences, much more—the project could cost half a trillion dollars to wire every home in America. Though huge in scope, the job would be straightforward if undertaken by a monopoly encouraged by sympathetic regulators.

Now, however, with new legislation preferring competition in all sectors of telecommunications, the task of financing multiple local residential networks on a competitive basis is proving devilishly hard.

As you might guess, I think the competitive model for local broadband networks wasn't thought through. Its defects were already clear a couple of years ago when major commitments to build competitive facilities fell apart, specifically the Bell Atlantic/TCI merger and several Bell companies' plans for ambitious roll-outs of interactive networks. The risks for competitors deploying too much fiber too fast seemed unbearable.

One risk is that inadequate demand shared among competing networks fragments the market—as every field-test of interactive video has implied—so no entity can hope to reach a high penetration. Conversely, a second risk is that only one entity will succeed in any locality in building a high-penetration broadband network which will prove so superior to every other delivery mechanism that rival telecom providers will simply demand fair access and ride to their ultimate customers on the pioneering investment of the first—and hence the last—network builder!

Since the two-wire world won't work, what will? My view is that the next wave of telecommunications technology favors a new "natural monopoly"—just one broadband distribution network in any locality—with such enormous and readily-expandable carrying capacity that there's no economic reason to build more than one.

With that likelihood, no first-wave entrepreneur wants to fall into the financial trap of becoming so constrained a monopolist as to lose out on the real goal—competitive profits in booming new markets for advanced telecommunications and information services. Hence, wide deployment of fiber optic facilities is stalling, while telephone and cable incumbents mark time, "bulk up" through mergers, and pursue less capital-intensive strategies that promise unregulated profits from services over today's infrastructure.

As a result, the nation is rapidly becoming the loser. The loss is not just the prestige of technological leadership that might flow overseas. A much more compelling loss was suggested in an article recently in the *New York Times Magazine*.<sup>4</sup> The article described a phenomenon economists call "path dependence" by which:

[S]mall, random events at critical moments can determine choices in technology that are extremely difficult and expensive to change.<sup>5</sup>

Famous instances where inferior solutions have won out include the QWERTY keyboard for typewriters, the gasoline car, and the VHS tape player. The author (Peter Passell) suggests that the next big technological mistake could come from the looming conflict between technically superior high-capacity fiber and wireless personal communications which cost less, take less planning, and pay immediate revenues to the U.S. Treasury from spectrum auctions.

In brief, there's an unfortunate risk that, without some sure way now to launch broadband networks, less productive technologies could siphon off demand. Once again, the best will lose. And so will all of us.

### Utilities Can Build Networks and Make Competition Work

In my view, the local *electric utility* is fortuitously positioned to meet this national need for early deployment of broadband residential networks and to make competition work—in telecommunications and information *services*. My reasons are simple:

- (1) The utility has its own critical economic imperatives to manage and market energy through state-of-the-art telecommunications, and they are financially very significant.<sup>6</sup>
- (2) As an independent entity not bound to compete with providers of telecommunications and information services, the utility can support *their* needs to get facilities up and running, in ways they are incapable of accomplishing themselves, financially and otherwise—in large part, because they are poised to compete against each other.

In the process, the utility would become the hinge on which a grand realignment in telecommunications could turn.

The energy-related reasons for utilities to foster advanced telecommunications infrastructure are compelling—not least, a need for nimble controls over energy supply and demand so the utility can market effectively and retain its customers. The day is not far off when "just-in-time" electricity will be as conventional—indeed, essential—as computer-aided processes in manufacturing, marketing, and throughout the economy. Today's local electric utility will be compelled to innovate strenuously—and defensively—to avail itself of the necessary telecom infrastructure in time to help it survive and win in reformed competitive electricity markets.

In moving to create such facilities by timely initiative, coupled with shrewd self-restraint, the utility would also relieve providers of telecommunications and information services of the crippling necessity to build such networks themselves.

Both logic and history suggest that today's incumbent providers of telecommunications will, in an exploding market, welcome some comfortable niche from which they can sell tomorrow's high-value services. This will be the case, most emphatically, if they can find ways to gain market share without first incurring the costs and risks of building the broadband infrastructure. In particular, both local incumbents—the telephone and cable companies—long for higher (unregulated) profits from sophisticated information services, but dread the financial risks of actually pulling costly fiber optic lines through neighborhoods.

I frankly doubt they will ever do so in competition with each other. Moreover, my research for the U.S. Department of Energy has determined that, on at least four similar occasions since the Civil War, incumbents have shied away from rivalries to build expensive new

telecommunications infrastructure, opting instead to invent ways they could share new markets.

I refer specifically to three documented agreements:<sup>7</sup>

- In 1867, Western Union and the Associated Press diverged, one into telegraphy and the other into gathering news.
- In 1879, Western Union and the new Bell Company agreed to specialize, respectively, in telegraphy and telephony.
- In 1926, AT&T and the Radio Corporation of America settled a conflict over patents for radio technology developed during World War I, with AT&T sticking to long-distance telephony and RCA launching local broadcasting, joined into nationwide networks by AT&T's long lines.

Then, in the 1950s and 1960s, cable TV came to market via a complex set of regulatory maneuvers that assured CATV a new niche between television broadcasting and telephony, without posing a competitive threat to either incumbent industry.

Significantly, these four historic market splits were accomplished by voluntary accommodation—not by government fiat. While an express contract among today's competitors to divvy up markets would doubtless cause antitrust concerns, the field is wide open for a neutral third party—to my mind, the electric utility—to launch shared fiber infrastructure and thereby avert potentially ruinous, facilities-based competition among telecom and information services providers.

### Cooperate Versus Compete

This opportunity flows from the fact that today's electric utility is not, at present, a deadly rival of any telecommunications incumbent in the incumbent's core business purview. Of course, the utility could forfeit this neutrality by choosing to become a competitive threat and jumping into telecommunications and information services as the new federal law permits.<sup>8</sup> But, if the utility would elect *not* to compete with telcos and cable companies in services—or, as has been suggested, “to eat their lunch”—but rather decides to build and manage just the facilities, the utility could emerge as the natural ally of each competitor and, best yet, of all competitors.

The utility's evolving function in telecommunications would be a familiar extension of its tasks as a utility today. With broadband fiber tending toward a

natural monopoly, some such utility function in telecommunications will plainly be essential—to bring local networks into being, drive them to higher and higher levels of penetration and toward universality, and run them right.

The builder and manager of a local network will have to be seen by its users as being free from bias toward any of the rival services carried. Its job will be to deliver those services to as many ultimate customers as feasible—without discriminating among providers. Its natural role, in brief, will be to foster *abundant capacity*, *equal access*, and *universal service*—the three economic and societal imperatives inherent in the new telecommunications technology.

Vis-à-vis service providers, today's utilities certainly have the right “physique” to provide the needed platform. Utilities are three times bigger than telecommunications firms in terms of capital plant and just as ubiquitous, reaching at least 1% more of the public than telephony and more than 30% over cable.<sup>9</sup> And, utilities are more respected than either, according to opinion surveys.<sup>10</sup>

In other words, I'm suggesting that the shrewd utility will now pass up the chance to become a full-line player in telecommunications and instead aspire to the narrower, but vitally important and conceivably vastly more secure, role of building and managing a natural monopoly in local telecommunications transport—what could be called “common infrastructure.”<sup>11</sup>

The utility should, and I believe can, best attain such a mandate by promoting consensus among incumbents and regulators. It would need to affirm its candid and straightforward intention to deliver both equal access and universal service—which it needs to maintain anyway in order to preserve its valuable distribution franchise for electric service.

Conceivably, a determined utility might “just do it” and get to the same point. Today's vertically-integrated electric utilities are well positioned to set off a chain reaction in telecommunications by simply preparing to grow or “thicken” energy transmission and distribution (T&D) functions to also incorporate telecommunications infrastructure. Such a horizontal expansion would be a truly logical part of the utility's own restructuring,<sup>12</sup> counter-balancing loss of the inherited electric generation monopoly and enabling the surviving T&D component to do two new things:

- (1) The utility would strengthen its local distribution by adding the transport of telecommunications as a new line of business, utilizing much shared

physical plant and personnel to reach a common, universal customer base.

- (2) The utility could also capture conceivably greater (unregulated) returns from its traditional line of business (electricity) by creating and assuring its own capacity to deliver potent energy information services to every retail customer via telecommunications—a role to which I will return as I conclude.

Put another way, I believe that today's utility can leverage its historic monopoly into a new, dual role in two restructured markets—in telecommunications, as the builder and manager of "common infrastructure," and in electricity, as provider of choice for telecommunications-dependent, knowledge-based "energy services."

### Take Initiative and Run the Infrastructure

A metaphor drawn from commercial real estate illuminates all of this: Like the developer of a shopping center, the electric utility would build a common telecommunications transport facility, which its tenants would customize (installing switches and possibly residential gateways, for example) to serve ultimate customers (who are meanwhile building up their own potent information capabilities to take advantage of the Internet).

Major strategic partners—specifically including incumbent local telephone and cable television providers—would, by mutual agreement, become "anchor tenants" under long-term priority leases, reflecting their places in today's telecommunications market, their capital investment in older networks (or "stranded costs," if you will), and their on-going franchised service obligations. Telcos, for one, may have special capacity to provide network management and to link up their existing backbone systems. Cable companies could make in-kind contributions of physical assets to be used in getting first-generation hybrid fiber/coax networks up and running.

To be fair—and lawful under antitrust laws<sup>13</sup>—other "specialty tenants" would also have rights to lease slots on common infrastructure, up to the limit of the fiber optic facility's expansive capacity.

Having built the infrastructure, the utility would run it on a non-discriminatory basis, at rates that are reasonable and in proportion to usage. But, significantly, because its central purpose in building the facility is to manage energy more efficiently, the utility would also be in a position to declare itself (or an

unregulated affiliate) the anchor tenant in its own special sector—efficient energy management—and gain a potentially critical preemptive edge against its own competitors in electricity sales. The prospect of an early link-up to broadband communicating meters the utility would place in residences should go a long way toward nailing down allegiance from the utility's traditional—but increasingly vulnerable—customer base.

Thus, in creating the infrastructure through which such information-rich energy services can be delivered, and crafting its own primacy in their delivery, the utility could justify its prudent initiative to create the essential telecommunications plant—to shareholders, ratepayers, and, of critical importance, regulators.

### Rational Initiative, Shared Opportunities


By casting itself as owner and manager of broadband transport facilities, the utility would free up its tenants (including its own energy services affiliate) to identify their best long-term opportunities in telecommunications and information services and to pursue them expeditiously.

Of course, incumbent providers—telephone and cable companies and the utilities, too—would enjoy some head start due to their "brand" reputations and their on-going relationships with customers. New competitors would share functionally-equivalent opportunities for their own ingenious assaults on the universal markets that the utility's initiative would open to all competitors.

Significantly, the regulatory controls that originally stabilized utility-type services and have long since paralyzed innovation will have largely been set aside. By not undertaking to furnish telecommunications and information services to ultimate customers, the utility's voluntary transactions with its tenants should be beyond the reach of much public utility regulation, even while its energy-saving initiative would greatly benefit energy consumers.

Of special significance will be the resulting ease of raising money to finance the huge investment needed to build a common infrastructure. The utility's revenues will come from its tenants, large and small, pursuant to their long-term leases for access to a universe of potential customers—a ready formula to raise funds from banks that will not depend on rates to be paid by consumers.

For consumers, their ultimate protection of service and economy will be exactly what Congress has desired to promote, but so far failed to achieve—

competition among rival providers of telecommunications and information services. The electric utility's timely and rational initiative will have made it all possible. 

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<sup>1</sup> *Telecommunications Act of 1996*, Pub. L. No. 104-104, 110 Stat. 56, hereinafter the "1996 Act."

<sup>2</sup> S. Conf. Rep. No. 104-230, 104th Cong., 2d Sess. 1 (1996).

<sup>3</sup> See U.S. Federal Communications Commission, *Notice of Proposed Rulemaking and Order Establishing Joint Board, In the Matter of Federal-State Joint Board on Universal Service*, CC Docket No. 96-45 (March 8, 1996).

<sup>4</sup> P. Passell, "Why the Best Doesn't Always Win," *New York Times Magazine* (May 5, 1996):60.

<sup>5</sup> *Ibid.*

<sup>6</sup> S. R. Rivkin, "Electric Utilities Will Build Telecom Infrastructure," *New Telecom Quarterly* (July 1994):15-19. More recently, federal and state regulators have begun to dismantle the vertically-integrated electric utility by opening up choices to consumers of power suppliers; this is analagous to the ability to choose long-distance telephone service today. See U.S. Federal Energy Regulatory Commission Order 888 ("Open Access Non-Discriminatory Transmission Services"), 61 Fed. Reg. 21540 (May 10, 1996) and, for example, California Public Utilities Commission Decision 95-12-063 ("Restructuring California's Electric Services Industry"), Cal PUC2d (December 20, 1995). The FERC has recognized the criticality of real-time information to enabling open markets to function in Order 889 ("Open Access Same-Time Information System..."), 61 Fed. Reg. 21737 (May 10, 1996), so there is eventually bound to be a need for real-time information flows to and from the residence for the purposes of managing and marketing electricity.

<sup>7</sup> R. Horowitz, *The Irony of Regulatory Reform* (1989), pp. 94, 97, 116-117.

<sup>8</sup> See 1996 Act, Title I, and especially Sec. 103 ("exempt telecommunications companies").

<sup>9</sup> The relative value of telecommunications and electric plants is a well-informed estimate. While the penetration figures given in the text are widely accepted, they somewhat understate official U.S. data. According to the U.S. Department of Commerce, *Statistical Abstract of the United States—1995*, there were 60.5 million cable and 98.0 million telephone households in 1994, and 101.1 million households served by electricity (1993 preliminary), of the total of residences computed to be 104.2 million households. See *Ibid.*, Table 897, p. 571; Table 980, p. 605; and Table 904, p. 574. Consequently, penetration totalled 58% (cable), 94% (telephone), and 97% (electricity).

<sup>10</sup> See, e.g., T. Kerver, "Utilities Power Cable," *Cablevision* (March 25, 1996):28.

<sup>11</sup> See S. R. Rivkin, *Positioning the Electric Utility to Build Information Infrastructure*, prepared for the U.S. Department of Energy, Office of Scientific Computing (now the Office of Computational and Technology Research) DOE/ER-0638 (November 1994). Available from U.S. Department of Commerce, Technology Administration, National Technology Information Service, Springfield, VA 22161.

<sup>12</sup> Possibly, combining local gas distribution, too, would invite even greater efficiencies, since market and environmental economics are coming to favor "distributed" generation of electricity—partially fueled by natural gas. One serious and relevant theoretical paper

from another philosophical era that merits being revisited in light of these technological and economic trends is W. J. Baumol, "On the Proper Cost Tests for Natural Monopoly in a Multiproduct Industry," *American Economic Review* 67, 809 (1977).

<sup>13</sup> Under the federal antitrust laws, the "essential facility" doctrine requires that, "While all joint ventures need not give access to all competitors that want to participate, access may have to be given if it confers a significant competitive advantage." L. A. Sullivan and A. I. Jones, "Monopoly Conduct, Especially Leveraging Power from One Product or Market to Another," in T. M. Jorde and D. J. Teece, *Antitrust, Innovation, and Competitiveness*, p. 165 at p. 176, citing inter alia *U.S. v. Terminal R.R. Assn.*, 224 U.S. 383 (1912) and *Associated Press v. U.S.*, 373 U.S. 341 (1945).