
Community Broadband

*Separating Fact
From Fiction*

January 2004



American Public Power Association

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1. Public Power Provides Community Broadband Services

More than 2,000 communities across the country have created public power systems—not-for-profit electric utilities that are owned by the communities and the people they serve. Public power systems share a common purpose—to provide adequate, reliable service at a reasonable price. They are locally owned and operated, giving citizens a direct voice in utility decisions through public meetings, the ballot box, and open policy board meetings. Across the country, not-for-profit utilities have an established track record of delivering affordable services. Nearly 500 of them have already celebrated 100 years in business, with 70 percent of all public power systems serving communities of less than 10,000 people.

Along with supplying electric power, public power systems build and maintain advanced, fiber optic communication networks. They rely on sophisticated networks to monitor their electric systems and generation plants, and to provide voice and high-speed data communications between non-contiguous facilities.

Numerous public power systems have leveraged these communication assets to provide broadband network services to local businesses and households. This is a natural extension of the utilities' role for the community in maintaining and operating communication infrastructure. With a skilled and mobile workforce, public power systems can construct, maintain, and operate a complex communication system. They have 24/7 call and monitoring centers, professional customer service departments, as well as an existing relationship with the customer.

The typical anchor tenant for the broadband network is the local government. Local officials employ the network to provide voice, high-speed data, and Internet communications, linking various departments and locations (for example, city hall, police, fire, warehouse, and library). The local school system is usually connected to the same network, providing teachers and administrators with high-speed Internet access and a wide area network for the local school system. A case in point is Sun Prairie, Wisconsin, where residents have saved more than \$1.2 million over the last three years by purchasing telecommunication services from the city-owned utility.

Some public power systems expand the broadband network further to supply services directly to the community. They typically begin by offering high-speed connections to those commercial/industrial consumers with multiple outlets within the community (for example, banks, pharmacies, and grocery stores).

The broadband network also can be tied into the local telephone central office, establishing a connection to the competitive access provider (CAP). This additional link bypasses local telephone circuits, substantially reducing the cost of long-distance voice communication.

The final phase of possible expansion is to provide broadband service to the residential consumer. Historically, this was provided through a hybrid-fiber coaxial system that delivers video signals and provides Internet connectivity over the same network. Customers thus enjoy data speeds of up to 10 million bits per second (mbps). Utilities can create their own Internet Service Provider (ISP) function, partner with an existing ISP, or develop an open-access network whereby multiple ISPs can offer service over the utility network.

Thanks to recent technology advances, some communities are deploying Fiber-To-The-Subscriber (FTTS) networks with speeds of 100 mbps or faster. Grant County Public Utility District in Washington (www.gcpud.org/zip), Bristol Utilities Board, Virginia (www.bvub.com/indexhtml.htm), and the Borough of Kutztown, Pennsylvania (www.kutztownboro.org), to name a few, are developing FTTS networks to provide affordable voice, video, and telephone service to local residents.

Broadband networks build a strong base for local economic development. The high-speed communications system developed by Barbourville Utilities in Kentucky (www.barbourville.com) in 1996 moved through the necessary startup phase and generated excess revenue just four years later. As a direct result of its fiber optic system, Barbourville landed a U.S. Immigration and Naturalization Service call center in 1999, bringing 300 new jobs to the community.

Cedar Falls, Iowa (www.cfunet.net), competes directly with its neighbor, Waterloo, which is approximately twice its size. In 2002, Cedar Falls' building construction valuation was more than double that of Waterloo. Over the past five years, 11 businesses have moved from Waterloo to Cedar Falls as a direct result of the broadband system. The network also enticed Target Corporation to build a distribution center in Cedar Falls, creating approximately 1,100 new local jobs.

High-speed networks can have a profound effect on a rural community's health care services. Numerous utilities furnish broadband access to local medical facilities, allowing x-rays and other images to be sent rapidly to doctors or specialists at remote locations.

Until recently, residents in the rural communities of Ione, Metaline, and Metaline Falls in the state of Washington had to drive one hour each way to the nearest pharmacy to fill a prescription. Using the fiber optic system installed by Pend Oreille Public Utility District, the Community Health Association of Spokane installed a telepharmacy unit in the Ione, Washington, local health clinic to dispense medications directly to the patients, eliminating the two-hour drive for rural patients.

Across the country, public power systems are evaluating the community's existing telecommunications infrastructure and determining if local needs are being adequately met. In many small towns and rural areas, no private sector provider is stepping forward to develop a broadband network. In these communities and others, public power systems are filling a critical void.

2. Intent of the 1996 Telecommunications Act

The Telecommunications Act was designed to promote competition and encourage innovation in the services available to consumers. During the drafting of this Act, there were many factors considered on how to achieve this goal. One goal was the deployment of new advanced communication networks. The authors of the bill envisioned local communities, through their public power utilities, developing robust communication infrastructure to provide advanced services to the citizens of the community.

The drafters of this Act understood that the lack of deployment of advanced services in small rural communities would become a gigantic problem. They were correct in this assumption. As the incumbent telephone and cable TV companies began developing their advanced networks, it became apparent that the deployment of advanced networks in rural America was not a priority. They began building out their infrastructure in densely populated metropolitan areas where they had the greatest opportunity to achieve a large return on investment. This is understandable. The shareholders invested their funds in these companies and expect a return on their investment.

“A traditional role of government has been to provide essential services to citizens when competitive markets fail to do so. ... Many rural communities were left with the choice of forming a community-owned electric utility or being left in the dark. Similarly, high-speed Internet access, while viewed as a novelty only a few years ago, now has come to be viewed as an essential element necessary for communities to create economic, employment, and educational opportunities.”

— Brief, Consumer Federation of America, Writ of Certiorari to the U.S. Court of Appeals for the Eighth Circuit.

Provision of alternative services is the exact reason many public power utilities were formed in the first place. It is déjà vu; rural America is being ignored again, just as they were at the end of the 19th and beginning of the 20th centuries with respect to electrification. During that time, electric infrastructure was being deployed by the large investor-owned utilities in metropolitan areas while they ignored rural communities. These rural communities recognized that the only way to keep abreast of the advancement of electricity was to create their own power companies, which they did.

By the end of 2005, about 500 public power utilities will have celebrated their centennials. It is apparent that history will need to repeat itself again because, unless these rural communities develop their own communication infrastructure, they will end up on the wrong side of the digital divide.

Fiction:

The intent of the Telecommunications Act is “...to provide for a pro-competitive, de-regulatory national policy framework designed to *accelerate rapidly private sector deployment* of advanced telecommunications and information technologies and services...”

— Kent Lassman and Randolph J. May, *A Survey of Government-Provided Telecommunications: Disturbing Growth Trend Continues Unabated*, Progress & Freedom Foundation, October 2003, p. 3.

Fact:

Despite the critics’ quotation, nowhere in the 1996 Telecommunications Act is the statement “accelerate rapidly private sector deployment.” This was part of the discussion during the drafting, but **never** incorporated into the Act as Congress realized that trust in the private sector would be unfulfilled in rural America.

What the Act does say when it defines itself is, “An Act, To promote competition and reduce regulation in order to secure lower prices and higher quality services for American telecommunications consumers and encourage the rapid deployment of new telecommunications technologies.” It goes on in Section 706, Advanced Telecommunications Incentives, and states, “...shall encourage the deployment on a reasonable and timely basis of advanced telecommunications capability to all Americans... measures that promote competition in the local telecommunications market, or other regulating methods that remove barriers to infrastructure investment.”

“To be sure, as the H.R. Conference Report notes, certain language in a Senate report describing a precursor to Section 706 suggests that the bill was aimed at accelerating ‘private sector’ deployment of advanced telecommunications. This language, however, was not ultimately incorporated into the statutory language of Section 706.”

— APPA Comments, *Inquiry Concerning the Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion*, FCC Docket 98-146, September 14, 1998, p. 18.

It is quite clear that this Act was codified with the vision of deploying advanced services to all Americans by anyone, including public power utilities. This fact was established by Senator Trent Lott’s statements during a floor debate in the Senate on June 7, 1995. First, Senator Lott explained that the Public Utility Holding Company Act (PUHCA) was being amended “to allow registered electric utilities to join with all other utilities in providing telecommunications services, providing the consumer with smart homes, as well as smart highways.” Second, Senator Lott observed, “In short, [the Act] constructs a framework where everybody can compete everywhere in everything. It limits the role of Government and increases the role of the market. It moves from the monopoly policies of the 1930s to the market policy of the future. Toward that end, the

removal of all barriers to and restriction from competition is extremely important, and it is the primary objective, and I believe, the accomplishment of this legislation...”¹

Observation from Sen. Trent Lott (R-MS): “The 1935 PUHCA is amended to allow registered electric utilities to join with all other utilities in providing telecommunications services, providing the consumer with smart homes, as well as smart highways.”

— John M. Eger and Arthur M. Becker,
*Telecommunications and Municipal Utilities:
Cooperation and Competition in the New Economy*,
report prepared for APPA, September 2000, p. 33.

The Federal Communications Commission (FCC) is enforcing the Act with a similar understanding: “Similarly, the Commission has found that the ‘overriding’ goals of the Telecommunications Act are to enable ‘all providers to enter all markets’ and to remove barriers that prevent consumers from choosing telecommunications providers ‘from as wide a variety of providers as the market will bear.’”²

To limit the pool of advanced service providers would be a great injustice to the unserved or underserved citizens of communities in less populated areas. It is an accepted fact that we live and work in an information age. Businesses transfer huge amounts of data over the Internet as a routine part of their business. They communicate between diverse locations with suppliers and customers. Without the infrastructure provided by APPA utilities, the long-term sustainability of these communities would be in jeopardy, from both an economic-development and quality-of-life perspective. After all, who better to understand the needs of this community than the citizens who reside within the community? Consumers require public power as a viable alternative.

¹ 141 *Congressional Record*, p. S7906 (June 7, 1995).

² “Comments of the American Public Power Association,” *Inquiry Concerning the Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion*, FCC Docket 98-146, September 14, 1998, p. 17.

3. Unfounded Charges

A. UTILITIES HAVE UNFAIR ACCESS TO TAX-EXEMPT BONDS

Financing is a major factor in the sustainability of any business, from both the availability-of-credit and the rate-of-interest perspectives. While some public power utilities issue tax-exempt General Obligation (G.O.) bonds, many of them forgo the option of using these instruments and issue revenue bonds for the construction of their broadband infrastructure. This is in part related to the fact that they want to demonstrate the viability of their business plan to the community and/or the fact that the interest rate differential between G.O. bonds and revenue bonds has decreased to the point where the difference is not worth the transaction costs.

This difference is substantiated in the paragraphs below describing the minimal interest rate differences attributed to financing in the electric industry. As noted in this report, lower cost interest rates only contribute approximately one-quarter of the difference in electric rates between public power utilities and investor-owned electric utilities. This confirms that there is an advantage in accessing lower cost interest rates. However, it is not a major factor, and it does not explain the great product price disparity between the public/private sectors.

Access to tax-exempt financing is a right that public power utilities have by statute. Investor-owned utilities also have access to attractive financing as demonstrated by the declining rate-of-interest difference discussed below.

Fiction:

“...cities have access to cheap capital through tax-free bonds unavailable to competitors...”

— “[Progress & Freedom Foundation] against muni telecom operations,”
Restructuring Today, October 16, 2003, p. 2.

Fact:

According to a study by APPA based on the most recent data, without access to tax-exempt financing, public power’s electric rates would increase by one-eighth of one cent. This accounts for 27 percent of the difference between investor-owned utility and public power electric rates since investor-owned utility rates were, on average, 0.45 cents above public power rates.

Expressed in cents, the estimated amount that public power's electric rates would increase without access to tax-exempt financing has steadily declined—from 0.21 cents in 1994 to 0.12 cents in 2000. This is because the difference in average interest rates for investor-owned electric utilities and public power electric utilities has steadily declined over this period.

The use of tax-exempt financing, as analyzed for public power's electric operations, only accounts for approximately one-fourth of the difference between investor-owned utility and public power electric rates.

— *The Public Power Rate Advantage, 2000 Data*,
APPA, July 2002.

Community-owned utilities have the right to access lower interest bonds, as part of the rights of local government, because they develop not-for-profit, **community**-owned communications networks that benefit everyone. These networks facilitate improved efficiency within local government by providing a voice/data network between dispersed city government locations, for example, connecting city hall, the police and fire departments, public works, and warehouse facilities. This ultimately improves the efficiency of local government, thereby reducing their overall tax requirements. The electric utilities also use these communication networks for the functions of electricity delivery. They connect the dispersed substations/electric generation plants with the electric control center where the dispatchers can monitor and operate the equipment.

Additionally, the communication network can provide voice communications at remote locations where telephone service was previously unavailable. Providing voice communications at these remote locations improves the efficiency of the utility by giving technicians the ability to call manufacturers directly from the field and perform troubleshooting procedures on an interactive basis.

Finally, not to be forgotten are the significant tax benefits that private, for-profit entities use. These include accelerated depreciation and various tax credits and expense deductions, for example. The benefits of these substantial tax breaks are discussed in the following chapter.

B. PUBLIC POWER UTILITIES DON'T PAY TAXES OR COLLECT SERVICE FEES

Public power utilities are not-for-profit entities that are exempt from federal income tax liabilities because of the Constitutional problem of one level of government taxing another. Importantly, they **do not generate profits**.

These utilities are primarily owned and operated by municipalities, counties, public utility districts, or other local government bodies. As such, they provide services to the communities they serve and set rates to cover expenses without incorporating any profit adders to satisfy shareholder expectations. However, to declare that they do not provide contributions to the local government is grossly incorrect. To rebut this allegation, let's review the long-established electric system operations at these utilities, where contributions have been documented for many years. Not only do public power systems provide a direct benefit to their communities in the form of payments and contributions to state and local governments, they contribute payments such as property-like taxes, payments in lieu of taxes, and transfers to the general funds.

APPA calculated net payments and contributions to state and local government and determined that for 2000 (the most recent data), the median amount paid by public power utilities was 5.7 percent of **electric** gross operating revenues. In contrast, investor-owned utilities paid a median of 5.0 percent of their revenues in state and local taxes and fees. Not only is their contribution lower, the investor-owned utilities' median amount contributed has recently declined 16 percent (from 5.8 percent of revenues in 1998 to 5.0 percent in 2000)."³ Public power utilities can be counted on to continue to provide similar contributions from revenue generated by the communication systems.

³ *Payments And Contributions By Public Power Distribution Systems To State And Local Governments, 2000 Data*, American Public Power Association, June 2002.

Fiction:

“...Publicly owned utilities don’t pay taxes ... or collect fees or taxes for the services they offer.”

— “[Progress & Freedom Foundation] against muni telecom operations,”
Restructuring Today, October 16, 2003, p. 2.

Fact:

There are two issues raised in this statement. First, let’s address the issue of not paying taxes. While we’ve documented the contributions made to the community by the public power utilities, we have not discussed the major provisions of the tax code that allow incumbent telephone companies the opportunity to substantially reduce their tax obligations. In the publication entitled *Major Tax Breaks For Investor-Owned Telephone Companies In The Year 2000*⁴ it is documented that telephone companies enjoy huge tax breaks that are not often discussed.

“Incumbent investor-owned telephone companies reduced their tax obligations by \$5.7 billion and reduced their rates by 5.2 percent. The U.S. Treasury conservatively lost \$4 billion because of tax breaks.”

— MSB Energy Associates, *Major Tax Breaks For Investor-Owned Telephone Companies In The Year 2000*, report prepared for APPA, January 2002.

This report concentrates specifically on the use of two important tax breaks—accelerated depreciation and investment tax credits. The cost of the private providers’ business (in the year 2000) would have been \$5.7 billion higher without the benefits they received from these two tax breaks. Their local exchange telephone service customers would have had to pay 5.2 percent more for telephone service.

What this demonstrates is that all competing telephone exchange carriers are at a huge rate disadvantage before they even begin offering service because of the incumbent’s 5.2 percent rate advantage. This is an almost insurmountable hurdle in a small-margin, high-volume business. And who is subsidizing these incumbent telephone companies? Everyone who pays income taxes. The U.S. Treasury did in fact lose, conservatively estimated, \$4.0 billion because of these tax breaks.

⁴ MSB Energy Associates, Inc., *Major Tax Breaks For Investor-Owned Telephone Companies In The Year 2000*, report prepared for the American Public Power Association, January 2002.

To address the second portion of the false charge, let's look at the claim that "Publicly owned utilities don't ... collect fees or taxes for the services they offer." Again, this is misinformation. The vast majority of public power utilities collect franchise fees from CATV subscribers and forward this fee directly to the city. There are a few that have chosen not to assess or collect franchise fees. That decision is a component of local control.

"We collect and remit franchise fees (as required by the franchise agreement) and Utility Users Tax (as required by city ordinance). These same fees and taxes are collected by Comcast as well."

— Juelle Ann Boyer, Alameda Power & Telecom.

Either way, it does not indicate a competitive disadvantage to privately owned CATV providers. Why? Because the FCC allows CATV providers to place franchise fees as a separate line item and not include this fee as a cost of service. Therefore, it does not impact the CATV provider's income or expenses.

Which takes us to the second point, the collection of taxes. Public power utilities that provide cable TV services collect all state and local taxes as required by law and as collected by non-public power utilities, and pass these revenues on to the appropriate authority. This has been a standard practice in the electric utility business for years and will also apply to the communication division of the utility as well.

After Glasgow Electric Plant Board (EPB) purchased the incumbent CATV system and upgraded it, for example, they increased the tax equivalency payments "by 35% to \$320,000 in 2002... Contrast this to what Comcast was paying for the same plant... The actual taxes they were paying on the plant were about \$12,000. That is less than four percent of what the EPB is paying!"⁵

⁵ Billy Ray, "The Six Biggest Cable Lies, Debunked," presentation at the American Public Power Association Annual Conference, June 16, 2003.

Fiction:

“...there are several very important tax issues that should not be ignored... the cable division’s profits will almost certainly be subject to federal and state income taxes.”

— *Cashing in on Cable: Warning Flags for Local Government*,
Beacon Hill Institute at Suffolk University, October 2001, p. 32.

Fact:

With statements like this it is quite apparent that they just don’t get it. **We are NOT for-profit utilities!!**

Ignoring this fact, public power opponents convinced the State of Florida legislature that public power utilities must pay taxes on revenues generated from telecommunications, and the legislature passed a law to that effect. Gainesville Regional Utilities appealed to the state court⁶ expressing their opinion that this legislation was unconstitutional. The court agreed. The Department of Revenue was not convinced that the court had ruled correctly and appealed the decision. Again, the appeals court agreed with the lower court’s decision and ruled that the state law was unconstitutional.

As reported in *Public Power Daily*,⁷

...A Florida court ruled that a state law requiring municipal telecommunications services to pay taxes is unconstitutional... The provision of telecommunication services is a legitimate municipal corporate undertaking for the convenience of a city’s citizens, analogous to the provision of electricity and water, the court noted.

⁶ Circuit Court of the Second Judicial Circuit in Leon County, *City of Gainesville vs. James A. Zingale, As Director, Department of Revenue, State of Florida*.

⁷ *Public Power Daily*, March 29, 2002.

C. PUBLIC POWER UTILITIES ARE GAMBLING WITH YOUR TAX DOLLARS

Fiction:

A flyer circulated by the opponents in the Tri-City Broadband referendum made these claims: “...SAY NO to higher property taxes... Vote NO on the Telecommunication and Broadband ‘Property Tax Increase’ Referenda... [S]hould they be gambling with your tax dollars on new multi-million dollar speculative ventures?”

— “Sooner or Later, You’ll Pay!”, flyer paid for by SBC and distributed in Batavia, St. Charles, and Geneva, Illinois.

Fact:

There are two points embedded in this charge, and both are false. The first point is that new broadband infrastructure initiatives are gambling. They are not: they are based on comprehensive business plans. The utility boards that review and develop these infrastructure initiatives are experienced in the oversight of capital-intensive operations.

“Gambling: To engage in reckless or hazardous behavior.”

— *American Heritage College Dictionary.*

Out of the 2,000 public power utilities in the U.S., approximately 500 will have celebrated their centennials by the end of 2005.

All public power utilities have a common purpose, which is to provide reliable, not-for-profit services at reasonable prices. This longevity speaks volumes about their ability to make conservative business decisions and wisely invest capital in sustainable business ventures. It does not mean, “to engage in reckless or hazardous behavior.” If they did, is it reasonable that such utilities would be able to stay in business and provide services for over 100 years?

“Utopia was a golden opportunity to put together a real business to fulfill a genuine public purpose. ‘This is a major public works project, but it’s not like in the era of F.D.R.,’ [Paul Morris] said. ‘It’s not a subsidy. We have a business plan.’”

— Matt Richtel, “In Utah, Public Works Project in Digital,” *The New York Times*, November 17, 2003.

The second point is that utilities are financially dependent on tax revenues. They are not: utility accounting rules dictate that the revenues and expenses from the diverse lines of business (for example, electric, water, and communications) are recorded in separate “enterprise funds,” and these rules dictate that they should be revenue neutral over the long-term life of the utility. To claim that the deployment of a utility-owned communications infrastructure is going to raise tax rates is incorrect and part of the scare tactics that opponents promote.

In an April 2002 memorandum posted on Batavia, Illinois' Web site, James Volk said: ⁸

Municipal officials expect to run the system 'as an enterprise fund' just like the sewer, water and electric. It must be able to pay its own way without support from taxes.

Frank Moses, Grays Harbor PUD, Aberdeen, Washington, said: ⁹

Title 54 RCW—Public Utility Districts—mandates that different lines of business must maintain separate funds, and that their rates cannot be 'discriminatory or preferential,' including self-sufficiency from rates charged—no subsidy is allowed. While the RCW did not refer to telecommunications as 'enterprise' activities, they are an enterprise fund...

Mark LeRoy, City of Manassas, Virginia, stated: ¹⁰

*For a detailed explanation of reporting for Governments, I believe there is no better source than the GFOA (Government Finance Officers Association) publication **Governmental Accounting, Auditing, and Financial Reporting using GASB 34 Model... proprietary funds (two types—Enterprise and Internal Service Funds) which are used to account for a government's business-type activities (activities supported, at least in part, by fees or charges)... it is easy to see that for a government to deploy broadband services that will be paid for by customer user fees, it would be inappropriate (and possibly illegal) to consider the fees paid by the public, and/or the revenue received by the provider, as any type of tax subsidy.***

⁸ James Volk, "Broadband Systems and Batavia," memorandum dated April 1, 2002, and cited in Joseph L. Bast, *Municipally Owned Broadband Networks: A Critical Evaluation*, report published by The Heartland Institute, 2002.

⁹ E-mail communication, November 28, 2003.

¹⁰ E-mail communication, December 1, 2003.

Fiction:

“...public entities have different incentives and objectives than private firms... [b]y definition, public providers are less focused on the need to rationally assess risks and the ability to make a profit.”

— Kent Lassman and Randolph J. May, *A Survey of Government-Provided Telecommunications: Disturbing Growth Trend Continues Unabated*, Progress & Freedom Foundation, October 2003, p. 3.

Fact:

The critics finally have part of it correct. Public power utilities do have different incentives and objectives, namely to provide reasonably priced, reliable services without adding abnormal profits into the cost of these services.

The incumbent cable TV providers have been reporting for years that the Paragould, Arkansas, system is a failure. If it were a failure, why did the City leaders unanimously reject an offer to sell the system for more than they had invested in it? The community didn't sell the system because the cable TV prices were lower, they had control over the quality of the programming, they had a local provider to communicate with, and the money was staying in the community—not being sent to some out-of-state conglomerate. And this set of reasons isn't just used in Paragould. It is happening in communities all across the U.S. It's the epitome of local control and local choice.

“In 1989 the citizens of Paragould, Ark. voted to support a \$3.2 million revenue bond to enter the cable TV business, in 1993 Falcon Cable made an unsolicited bid to purchase City Cable for \$4 million, [and] the City Council unanimously voted to reject their offer. ‘The citizens realized they were better off in the long run to go with us [the utility].’”

— Gary Gray, “Other cities enter telecommunications,” *The Jackson Sun*, January 7, 2003.

In Iowa, for example:

*Out of 32 elections, only two communities voted down the formation of municipal telecommunications utilities, whereas the majority were affirmed with voting margins exceeding 80 percent.*¹¹

¹¹ Montgomery Van Wart, Dianne Rahm, and Scott Sanders, “Economic Development and Public Enterprise: The Case of Rural Iowa’s Telecommunications Utilities,” *Economic Development Quarterly*, Vol. 14, No. 2, May 2000, p. 139.

D. MUNICIPALITIES ARE BOTH THE REGULATOR AND COMPETITOR

Fiction:

“...[the city] is competitor, regulator, judge, jury and executioner.”

— Tom Schatz, “Coming Soon: Gov. Telecom, Inc.,” *Citizens Against Government Waste*, June 27, 2001, p. 2.

“The typical [franchise] process offers opportunities for the municipal authority to impose burdensome service obligations, unrealistic build-out requirements or other expensive conditions.”

— Kent Lassman and Randolph J. May, *A Survey of Government-Provided Telecommunications: Disturbing Growth Trend Continues Unabated*, Progress & Freedom Foundation, October 2003, p. 7.

Fact:

As established in the last chapter, public power utilities are financially self-sufficient. However, their autonomy does not end there. Oftentimes, their governance is separate as well. They may have their own utility board or commission that oversees the direction and operation of the utility. It

would be extremely rare for the utility to be responsible for issues related to the cable TV franchise, as this is the local government’s function, not a utility function.

“...a court recently held that a franchising authority may not exercise its regulatory authority in an ad hoc manner that fails to restrict possible arbitrary conduct... requires a city to set a content neutral, non-discriminatory fee for cable television franchise and prevent use of the fee as a vehicle for selecting a preferred operator... a franchising authority may not impose a policy that has the effect of permitting only one company to operate a cable franchise in the franchise area.”

— Jeremy H. Stern and William F. Bly, *MuniToons: The Folly of Municipal Ownership of Broadband Facilities*, September 9, 2002, p. 11.

It should be noted that local governments do not regulate telecommunications providers. That is done by the federal government and the states. Internet access providers are generally not regulated by any level of government. Local governments do manage public rights of way, but this is subject to federal and state non-discrimination and competitive neutrality requirements. Besides, incumbent cable and telephone companies are already in

the public rights of way, so they can hardly claim to be adversely affected by local right-of-way management practices. Local governments do typically regulate cable service providers, but this is done through cable franchises that implement well-defined federal policies and standards. The 1996 Telecommunications Act, Title VI, is very explicit about the content, requirements, and development of these franchises. In other words,

the local government negotiates with the franchisee, and the Federal Communications Commission governs the substance of these agreements. If the municipality tried to incorporate perceived unwarranted obligations in the franchise agreement, the incumbent cable TV provider can appeal to the FCC, who will enforce the regulations as outlined in the Act.

As noted by the following excerpt, the Telecommunications Act is very thorough in defining what is and what is not allowed in the cable TV franchise agreements.

1996 Telecommunications Act, Part III, Franchise and Regulation

Section 621 of the 1996 Telecommunications Act addressed franchising by codifying these points:

...a franchising authority may not grant an exclusive franchise and may not unreasonably refuse to award an additional competitive franchise... In awarding a franchise, the franchising authority ... shall allow the applicant's cable system a reasonable period of time to become capable of providing cable service to all households in the franchise area... A franchising authority may not impose any requirement under this title that has the purpose or effect of prohibiting, limiting, restricting, or conditioning the provision of a telecommunications service by a cable operator or an affiliate thereof.

Fiction:

“Franchise agreement may require the cable operator ... to pay franchise fees [sic] in an amount up to 5% of gross revenues ... and comply with customer service obligations.”

— Stern and Bly, *MuniToons: The Folly of Municipal Ownership of Broadband Facilities*, p. 8.

Fact:

Stern and Bly did touch on one point that is very telling, that incumbent cable TV operators may have to “comply with customer service obligations.” This statement begs the next question—why would municipalities institute customer service obligations unless there was a real concern about the incumbents’ response to service complaints? This theme is played out

“We were getting more complaints about the quality of cable TV than pot holes, water, sewer, or anything else,’ [Ardmore, Oklahoma, City Manager John] King said. ‘People were obviously dissatisfied with the service.’”

— Todd Moschella, “Getting Connected,” www.Ardmoreite.com, August 21, 2003.

in many of the public power utilities’ deployments—in response to poor service and lack of response to complaints from the local provider. When a public power utility deploys a broadband network, which can deliver cable TV, the citizen-owners have local control of their services.

E. GOVERNMENT PROVISION OF SERVICES IS OUTDATED

Public power continues to be a consumer-friendly alternative to incumbent communication providers. Historically, they have always had to offer competitive electric rates and services or their consumer-owners would sell them. Public power utilities combine the best of their virtues by paying attention to the availability of services in their community and delivering new services and technologies to fulfill any shortcomings. This concept will never become outdated.

As Franklin D. Roosevelt said in one of his speeches, “I therefore lay down the following principle: That where a community—a city or county or a district—is not satisfied with the service rendered or the rates charged by the private utility, it has the undeniable basic right, as one of its functions of Government, one of its functions of home rule, to set up, after a fair referendum to its voters has been had, its own governmentally owned and operated service.”¹²

Fiction:

“...justifications for government intervention are holdovers from the 19th or 20th century natural monopoly mindset that dominated public power, water and communications systems.”

— Kent Lassman and Randolph J. May, *A Survey of Government-Provided Telecommunications: Disturbing Growth Trend Continues Unabated*, Progress & Freedom Foundation, October 2003, p. 4.

Fact:

Public power’s mandate is to provide services that contribute to the community’s success. This is not government intervention, but a citizen-demanded service. This goal is achieved by offering lower cost and greater bandwidth services to customers. This facilitates the availability of new communications applications in the community and helps increase employee productivity in the work place. Additionally, utilities oftentimes lease excess capacity to wholesale service providers—giving non-facilities-based service providers new options for reaching customers.

¹² Franklin D. Roosevelt, “Portland Speech,’ A Campaign Address on Public Utilities and Development of Hydro-Electric Power,” Portland, Oregon, September 21, 1932.

What makes public power utilities well positioned to meet the growing communications needs in their communities? They have often had to install fiber optic cables for internal operations, making it a natural progression to

“For instance, in the city of Spencer (population 11,000), the incumbent cable TV provider outspent the citizens’ group that backed the initiative [to create a municipally owned broadband network] by 130 to 1. Nonetheless, a 91% victory margin was achieved by supporters. According to one commentator, there are at least four reasons for the city’s actions: ‘dissatisfaction with current service, the hope of economic development, a desire to improve local educational opportunities, and preparation by city electricity and gas utilities for competition in those industries.’”

— Montgomery Van Wart, Dianne Rahm, and Scott Sanders, “Economic Development and Public Enterprise: The Case of Rural Iowa’s Telecommunications Utilities,” *Economic Development Quarterly*, May 2000, p. 139.

develop broadband networks for community use. Because they are local, they have credibility with residential and commercial customers. Many have been in operation for over 100 years, so they offer stability in an unstable communications and financial environment. Reliable access to high-speed data is critical to a city’s goal of improving education and advancing economic growth.

As University of Iowa Professor Montgomery Van Wart and his colleagues point out: ¹³

First, public enterprises have often acted as guards against excessive charges by private monopolies. Public enterprises do this by creating an environment in which new competition may emerge, by providing price comparisons, and as a means of hastening needed service provision. Second, the services offered by public enterprises have tended to be those affecting the community at large—often services that are not easily divisible. Finally, public enterprises are an efficient solution to service provision when the large capital investment and high maintenance costs involved are prohibitive for unsubsidized private sector entry and operation.

¹³ Van Wart, Rahm, and Sanders, “Economic Development and Public Enterprise: The Case of Rural Iowa’s Telecommunications Utilities,” p. 133.

F. PRIVATE PROVISION OF SERVICES IS MORE EFFICIENT

Fiction:

“Extensive research shows privatization delivers significant cost savings, greater accountability and responsiveness to consumer or elected officials, and a level of quality equivalent or superior to public sector delivery... [with] cost reductions of between 20–50 percent.”

— Joseph L. Bast, *Municipally Owned Broadband Networks: A Critical Evaluation*, The Heartland Institute, November 2002, p. 16.

Fact:

While public power’s hometown advantage—low rates, commitment to local communities, not-for-profit operations, public accountability, local decision making, and customer service ethic—have served them well, often for over a century, the major benefit has been low-cost rates. To document this fact, a review of the rates in the long-established electric industry would be prudent.

A great benchmark of rates, and efficiency, would be to compare the residential *electric* rates of public power utilities to investor-owned utilities. During 2002 (the latest data available) the average rates paid by residential customers of investor-owned utilities were 13 percent above those paid by customers of publicly owned systems.

— Energy Information Administration, Form EIA-861.

During 2002 (the latest data available) the average electric rates paid by customers of investor-owned utilities were 13 percent above those paid by customers of public power systems. Public power utilities are able to keep costs down through local scrutiny of operations, and with their local presence they are responsive to customer needs. Although more than 1,200 public power systems serve 3,000 or fewer customers, they understand efficiency just as well as larger systems.

Fiction:

“Public provision of telecommunications services is unlikely to be as efficient as private provision.”

— Bast, *Municipally Owned Broadband Networks: A Critical Evaluation*, p. 2.

Fact:

Although broadband infrastructure deployments of public power utilities are relatively new, it appears that their long history of low rates will apply to these communication services as well. In a 2002 random sampling of 12 public power utilities, the median price of high-speed, residential, Internet service (cable modem) was \$29.45 with average offering of 2.2 megabits per second. Public power utilities’ median price for cable TV services was \$26.13, and they delivered an average of 71 channels. Compared with large cable TV companies, this is an extremely attractive offering.

Fiction:

“These investments have been unsuccessful from a pure business viewpoint... [yet they go on to say] it is artificial to look at the returns over a mid-range time frame such as we have done...”

— Ronald J. Rizzuto and Michael O. Wirth, *Costs, Benefits, and Long-Term Sustainability of Municipal Cable Television Overbuilds*, Denver, Colorado: GSA Press, 1998, p. 3.

Fact:

Public power utilities have taken a leadership role in preparing their communities for the future by pursuing the development of new communication technologies as an integral part of community growth. When these communities actively explore the development of these networks, they do so by holding public hearings. During this process the incumbent cable TV and telephone companies propagate many falsehoods, including withering publicity that implies that this is a poor business decision. They cite many flawed studies that supposedly document the “failures” of similar deployments.

“In 1998, Professors Ronald Rizzuto and Michael Wirth of the University of Denver studied the case histories of four municipal cable systems and concluded that such systems are generally unsuccessful and unsustainable. The professors qualified their conclusion in three important respects: (1) they were examining only revenues from cable services, and not other potentially significant revenue sources such as telephone and broadband services; (2) the study used performance criteria applicable to private sector projects, even though municipal objectives are fundamentally different; and (3) some of the municipal systems studied were at an early stage, before they were fully operational.”

— Karl Bode, “Interview with Jim Baller, municipal broadband attorney,” *Broadband Reports*, July 2003, p. 9.

the cable TV portion of the networks, ignoring any potential revenue from the delivery of data and voice. In short, taking to heart all the qualifiers included in the publication, the touted “results” are garbage.

One major citation is the publication from Ronald Rizzuto and Michael Wirth that supposedly documents these many failures. What critics fail to publicize, and this by the authors’ own admission, is that these studies are flawed. The authors admit that the deployment of broadband networks is a long-term investment that needs to be evaluated over the life of the network, not by the revenues generated in the first few years of startup. The authors also considered only revenue from

G. BROADBAND NETWORKS ARE TOO COMPLEX A BUSINESS FOR PUBLIC POWER UTILITIES

Fiction:

“...there is a big gap between running a monopoly electric power system and a competitive telecommunications network.”

— Joseph L. Bast, *Municipally Owned Broadband Networks: A Critical Evaluation*, The Heartland Institute, November 2002, p. 15.

Fact:

Public power utilities have been delivering superior electric service to their customer-owners for over 100 years. To imply that the delivery of electric service is not complex is absurd. Electricity is the only home/business energy service that cannot be stored. When a light is turned on, there is an electric generator somewhere that must instantaneously increase its output to match the new consumption. This is facilitated through a

complex network of electric generation plants that connect to the consumer through transmission and distribution lines. Communication networks require the ability to provide connections, but do not require the management coordination for instantaneous matching of supply to demand. This experience will prepare the utilities for the challenges of deploying broadband infrastructure.

“While some might argue that municipal utilities delivering telecom and entertainment services is a new phenomenon, in Kentucky the Frankfort Plant Board, a water and electricity utility, began providing cable TV service in 1954.”

— Sean Buckley, “Municipal utilities lead next-gen broadband,” *Telecommunications Magazine*, August 15, 2002.

Currently almost 570 public power utilities have deployed broadband networks for either internal use or retail services.

Internal uses include:

- Operating city-wide networks for municipal government—which facilitates internal data transfer between non-contiguous facilities;
- Electric system operating and control systems (SCADA); and
- Automated meter reading systems.

Retail services include:

- Cable TV;
- Internet Service Provider (dial-up or cable modem);
- Local telephone;
- Dark fiber leasing; and
- Broadband network—which provides voice/data connectivity within the community or beyond, but no content.

Some of these utilities have been operating communication networks for almost half a century. Frankfort Electric and Water Plant Board (FEWPB) in Kentucky started its own cable TV service in 1954. Currently, there are 109 public power utilities providing cable TV.

Fiction:

“Offering telephone and cable service is far more complex and difficult... telephone service requires switching equipment, secure facilities, backup power generation, and a trained staff...”

— Bast, *Municipally Owned Broadband Networks: A Critical Evaluation*, p. 15.

Fact:

The best way to refute these false charges is to respond, point by point, by comparing the delivery of telephone/cable vs. electric services. The critics claim that telephone service requires:

- **“Switching Equipment”**—So do electric substations, which provide switching points as well, plus they transform the electricity from high voltage to a lower voltage and monitor and correct voltage levels.
- **“Secure Facilities”**—Power generation plants, substations, and control/dispatch/computer centers all require secure facilities, not only from physical harm and intruders, but also from natural events and cyber attacks.
- **“Backup Power”**—Electric dispatch centers, substations, and generation plants, for example, also require backup power.
- **“Trained Staff”**—While this is true for telephone, cable, and electricity, because of the management-coordination challenges of instantaneous adjustments required to match generation with load in the electric system, the training requirements are at least as high, but probably higher.

To state that communication systems are more complex than the electric industry is incorrect. The exposure to high-voltage equipment and the related danger to the employees of electric utilities are much greater. Comprehensive safety programs and employee training to ensure the electrical safety of the workforce is of utmost concern to management. To address these concerns, public power electric utilities have developed extensive safety training programs and most have multiyear apprenticeship programs.

These point-counterpoints also are intended to show that the corporate governance of an electric utility is experienced in management of complex operations. Additionally, it is quite apparent that many of the issues related to the deployment of communication systems apply to the experience gained in operating an electric system. This experience has helped prepare public power utilities for the challenges of delivering communication services.

Fiction:

In their statement, Lassman and May insinuate that public power utilities should not deploy communication networks because, “Telecommunications markets are dynamic and constantly changing... Technological innovation allows providers to offer new services applications, such as Voice over Internet Protocol (VoIP), Internet and text messaging, cable telephony, and wireless communications.”

— Kent Lassman and Randolph J. May, *A Survey of Government-Provided Telecommunications: Disturbing Growth Trend Continues Unabated*, Progress & Freedom Foundation, October 2003, p. 4.

Fact:

Public power utilities continually lead the industry in technological advancements. Muscatine Power and Water, Iowa, deployed a video on demand service in March of 2003, becoming one of the first cable TV operators in the country to offer this service.

Coldwater Board of Public Utilities, Michigan, and Frankfort Electric and Water Plant Board, Kentucky, both deployed Voice over Internet Protocol (VoIP) in the summer of 2003. Cable giant Time Warner hopes to offer this service in the spring of 2004.

The Borough of Kutztown, Pennsylvania, was the first utility to completely deploy a Fiber-To-The-Home network in the United States.

“Voice over Internet Protocol (VoIP) continues to advance, with the Frankfort, Ky., Plant Board... [and] Coldwater, Mich., Board of Public Utilities [deploying systems].”

— *Communications Technology*, p. 11.

Owensboro Municipal Utilities, Kentucky, launched a wireless, wideband Internet access service in November 2002, and by October 2003, they had 1,400 customers using the service and another 100 future customers on the waiting list.

All of these community-owned utilities are leading the industry in technological advancements.

H. CATV CONTENT IS DIFFICULT TO OBTAIN

The success of a retail cable TV operation is dependent upon the delivery of a large selection of quality cable TV programs. Program alternatives consist of cable television programming networks (cable networks) and local broadcast networks. The drafters of the Cable Television Consumer Protection and Competition Act of 1992 (Act) understood that to promote competition in the delivery of cable services, every cable operator must have access to these networks. To ensure that this occurred, the Act mandated regulations barring any cable network from entering into exclusivity contracts, thereby making cable network programming available to all cable operators. Additionally, the Act includes regulations that outline the requirements of the cable operators to carry local broadcast networks. These regulations ensure that all cable operators shall have the right to carry the same network programming.

Fiction:

“The operator ... must negotiate sophisticated retransmission consent agreements with content providers in order to obtain content for the system.”

— Jeremy H. Stern and William F. Bly, *MuniToons: The Folly of Municipal Ownership of Broadband Facilities*, September 9, 2002, p. 3.

Fact:

It is apparent that the regulations enforced by the FCC govern the availability and carriage of many networks. However, these regulations did not anticipate one emerging problem, which is programming developed by major cable TV

“...with respect to distribution to persons in areas served by a cable operator, prohibit exclusive contracts for satellite cable programming or satellite broadcast programming between a cable operator and a satellite cable programming vendor...”

— Telecommunications Act of 1996, Part III, Franchise and Regulation, Section 628.2(D).

operators and broadcast exclusively on their own networks. An example of this is the Comcast Sports Network (CSN). Since this network program is not broadcast via satellite, it is not available to competing cable TV companies. CSN enacted exclusive agreements with Philadelphia sports teams to cover and broadcast many of their games. For public power utilities that deploy cable TV services in the Philadelphia area, this is a major problem, as many consumers will not switch to a different cable TV operator if they lose coverage of their local sports teams.

As cable TV operators continue to develop their own exclusive content, this problem will become more troublesome. All competing operators will be faced with an almost insurmountable handicap if this exclusionary market-power problem is not addressed in the future.

Fiction:

“Small cable firms... have gone out of business because they couldn’t negotiate terms as favorable as those given to such giants as AT&T and Comcast.”

— Joseph L. Bast, *Municipally Owned Broadband Networks: A Critical Evaluation*, The Heartland Institute, November 2002, p. 15.

Fact:

Public power utilities have joined the ranks of many small cable TV operators by joining the National Cable Television Cooperative (NCTC). The combined purchasing power of the NCTC ranks second in subscribers served, with Comcast the only larger purchaser of programming. Through the Cooperative, utilities are able to purchase cable programming at competitive prices and simplify the deployment of their cable TV systems.

The National Cable Television Cooperative is “a not-for-profit, member-operated purchasing organization that was created in 1984. The Co-op negotiates and administers master affiliation agreements with cable television programming networks on behalf of its member companies. The Co-op has more than 1,000 member companies that serve more than 14 million subscribers. By combining the purchasing power of member companies, the Co-op is able to take advantage of the same volume discounts that large multiple-system operators qualify for on programming and service purchases.”

— National Cable Television Cooperative Web site, www.cabletvcoop.org.

Utilities are still required to negotiate individually with local programming broadcasters. The FCC mandates that cable operators carry local broadcast networks. Cable operators can challenge perceived failures of delivery through the FCC.

The virtues of community service and local choice are most apparent in the development of the cable TV channel lineup. Public power utilities create a local programming board consisting of customer-owners to address which networks will be carried on the cable system. The board oftentimes sends out surveys giving the

community the option as to what networks the community wants to view. This isn’t done once and then forgotten. The community is resurveyed periodically to keep up with the changes in network options and community desires. It is highly improbable that any major cable TV company offers its customers significant control over the channel lineup.

Additional Information

The purpose of this report was to expose the reader to the facts concerning public power utilities' deployment of broadband services. It is apparent that these utilities have the proficiency to evaluate, deploy, and operate broadband networks without additional regulations or restrictions. For more information on APPA utilities, please visit APPA's Web site at www.APPAnet.org.

SYNOPSIS *of* COMMUNITY BROADBAND DEPLOYMENTS: Articles from APPA Publications

A. Fiber-To-The-Subscriber

Taking Fiber Home

by F. Garrett Johnston

Public Power magazine

September–October 2002

It was not long ago that fiber-to-the-home (FTTH) technology was deemed too expensive and hybrid fiber-coax was the choice of many. But now prices for FTTH technologies have dropped and the number of vendors has increased. Public power utilities looking to offer broadband services say there is no reason to install a hybrid-fiber coax (HFC) system when they are eventually going to have to replace it with a full fiber network.

Fiber optic networks use hair-thin filaments of transparent glass or plastic that allow light to pulse through, transmitting voice, data and video signals. Television signals are collected from a satellite at a head-end facility and then relayed through a fiber optic network connected to homes or businesses.

The migration to FTTH is one of the most significant events surrounding telecommunications technology. In the early 1990s, the dominant telecommunications distribution system used coaxial cable and a few years later utilities started installing HFC.

HFC is still standard for a broadband network, but fiber optic systems are poised to take off. By the end of 2002, Grant County Public Utility District in Ephrata, Wash., is expected to have about 3,300 customers connected to its fiber system. The borough of Kutztown, Pa., began offering services on its FTTH system in July. Other cities deploying or considering broadband systems include Truckee, Calif.; Taunton, Mass.; Bristol, Va.; Jackson, Tenn.; and Palo Alto, Calif. “There will be about three to five trials and five to 10 announcements of actual intentions to deploy this year,” said Neil Shaw of Uptown Services, a utility consulting firm that partners with APPA’s Hometown Connections on broadband projects.

In June, the board of Truckee-Donner Public Utility District authorized the utility to offer broadband services. The utility originally chose fiber-coax but is now designing a full-fiber system that can deliver over 120 analog and digital video channels, high-speed data services and competitive voice services.

A “future-proof” technology

Officials opted for the redesign after evaluating the cost of HFC-related construction and seeing the cost of customer premise devices for fiber drop significantly, said Allen Harry, director of telecom services for Truckee-Donner. Fiber-to-the-home systems are seen as “future-proof” because they can accept additional services fairly easily and provide almost unlimited bandwidth, he said. Unlike HFC systems, they will not have to be upgraded for 25 or 30 years—and even then only the electronics on each end will have to be replaced.

“We just believe it is economically feasible for us to do this today,” said Harry. “Sooner or later, with a hybrid fiber-coax system, one would end up taking the fiber all the way to the house, because that is the ultimate goal of anyone in this business. There’s no reason to build it twice.”

By going with fiber-to-the-home instead of HFC, Truckee-Donner staff estimate they will save more than \$2 million in installation costs, said Harry. An HFC system would cost \$1 million to make space on poles to keep the system away from electric wires. It would cost another \$1 million to dig trenches and lay conduit in a few selected neighborhoods, said Harry.

Because fiber is non-conductive, there is no need to rearrange wires or dig trenches, because the fiber can be pulled near overhead conductors or through energized conduits all the way to the house, said Harry.

Systems are active or passive

Fiber-to-the-home systems come in active or passive technology. Active networks serve more homes per split fiber (or node), are more robust and require fewer fibers than passive systems. Each node for an active optical network (AON) can serve 256 or more homes, while a passive optical network (PON) node can split a fiber for anywhere from 16 to 64 homes. Active networks require installation of electronic cabinets in the field for splitting the fiber, creating maintenance issues related to moisture and other equipment.

Grant PUD will blanket service territory with fiber

Grant County Public Utility District chose an active optical network connected to a termination box from Worldwide Packets of Spokane, Wash. The box attaches to the outside of the meter, enabling the utility to automate meter reads and provide homeowners access to additional services. With the active network, Grant County can accommodate multiple providers for video, voice and data services, said Ed Williams, director of customer service for Grant County PUD.

“We chose to deploy an active network to ensure the long-term success of our system,” said Williams. “Our team extensively researched both active and passive networks and determined that with the implementation of a passive network, our community would be out of bandwidth in two years, frustrated because we couldn’t add other providers, not able to provide high-definition TV and locked into a single telephone provider. Our network, called Zipp, allows us to maintain an open access system and provide choice in services to our customer-owners.”

Grant County’s implementation has been a success. The number of customers using video, telephone and data provided by the PUD’s system grew from 200 in 2001 to more than 2,000 a year later. The fiber network passes about 7,000 homes and businesses and eventually will pass all of the utility’s more than 36,000 electricity customers.

The services offered through Grant County PUD’s system are so popular that construction cannot keep pace with demand. Last fall, the utility launched a petition program to discover the areas of its territory most interested in taking service. The plan was to construct fiber in the 15 or 20 communities that garnered signatures from 35 percent of their residents, but more than 85 communities met that threshold.

Grant County’s budget for the project enables it to install the system in about 25 neighborhoods a year. The team is midway through a six-year construction schedule.

The schedule has displeased some residents who do not want to wait for service, said Williams. “The problem is we’re almost too popular. That’s a good problem to have.”

A number of small technical issues had to be worked out at Grant County when the system was installed, said Williams. The first video signal was “awful” by the time it reached a customer’s premise.

“It was filled with freeze-frames and audio so bad it sounded like it was in a barrel,” said Williams.

Those problems have been cleared up, although the utility is still working to fix closed-captioning and audio-video synchronization issues, said Williams.

Installing FTTH is expensive. Grant County is budgeting \$20 million per year for all six years of construction, with a per-neighborhood cost of \$500,000, said Williams. Shaw, a consultant from Uptown Services, estimated it costs about \$1,000 per home passed to install a system and another \$1,000 for each premise connected later.

Kutztown spending \$4.6 million on citywide system

Kutztown allocated \$4.6 million for its fiber optic communications infrastructure, network operating center, TV headend, automatic meter reading system and initial demarcation units. Kutztown staff said building and owning a fiber optic wide-area network would result in a community intranet that would enhance the borough's existing electric, water, wastewater, solid waste and recycling services through an automated intelligent meter reading system with multiple capabilities, online account access and bill payment.

Customer offerings at Kutztown include one-stop shopping, new payment and billing options, AMR-related services and public works security monitoring. The borough will own the infrastructure, operating under the brand name Hometown Utilicom, and provide television service and partner with Internet and telephone providers. Future services could include wireless Internet, video and music on-demand, home shopping, televideo conferencing and home and distance learning applications.

"The opportunity to expand potential revenue sources is great with this telecommunications project," said Borough Manager Keith Hill. "Revenues stay within the borough and our credit rating and borrowing ability is enhanced because we have this valuable physical asset and revenue source."

Kutztown is perfect for this telecommunications project, partly because it is home to Kutztown University and college students clamor for high-speed Internet data. It is also located along a busy highway corridor between three larger cities, Reading, Allentown and Bethlehem, meaning there is opportunity for economic development.

Small size enables efficiency

"We feel the fiber-to-the-home type of architecture, with the capabilities of high-speed data, voice and video all on a converged line is going to be very attractive to businesses," said Hill. "Plus, the borough of Kutztown is just 1.6 square miles so we're able to build this plant very efficiently without having to go long distances into a rural area."

Kutztown opted for a passive optical network over an active/electrical network because of lower cost, high reliability and the absence of maintenance requirements at intermediate network points, said Frank Caruso, director of the borough's Information Technologies Department.

Kutztown chose technology from Optical Solutions Inc. of Minneapolis because the vendor offers single residential home units, expanded units for either residential or light commercial customers, and multi-dwelling units for apartment complexes, said Hill.

Some vendors had a good residential system, but did not have a good multi-dwelling unit system, said Hill. Others had better data and voice technology or good video, but not necessarily a good converged service system for voice, video and data. The Optical Solutions product provides a solution for all three, he said.

Taunton tests active optical system

In Massachusetts, Taunton Municipal Lighting Plant is testing a fiber system that could be used to provide hourly meter reads. The utility's power pool bills on an hourly basis.

"In this deregulated world, we need to be able to communicate with our customers far more expansively than was ever needed before," said Taunton General Manager Joe Blain.

Taunton has a \$1.5 million budget for its test project, which calls for consultants to test the system's ability to send TV and data signals simultaneously. "The system worked beautifully," said Project Manager Rick Velez. "The signal strength and quality at the end point was so clear one couldn't discern that the signal was diminished at all."

Taunton opted for an active optical network for two reasons. "Passive networks usually require a large amount of fiber to be brought back to a head-end area, and our system does not require that," said Velez. "Also, as bandwidth requirements increase in the future, you're going to end up having to reconstruct part of [a passive network] and change your system around to accommodate it. And our basic premise was: make it once and make it as future-proof as possible."

Bristol using multiple vendors

Some utilities, such as Bristol Virginia Utilities, have opted for multiple vendors. The utility already uses its fiber system to offer broadband Internet services to businesses. By late fall Bristol expects to provide data, telephone and cable TV to residential customers.

Bristol Virginia Utilities chose Alcatel, a French company with offices in Raleigh, N.C., to provide home box devices and Optical Solutions to serve businesses. Alcatel was better suited to provide cable services to homeowners, while Optical Solutions' technology could support telephone and T1 lines that enable business to use hundreds of phones on a single system, said Mark Lane, network engineer for Bristol Virginia Utilities.

“Alcatel’s product is standard-based, so our cable plant doesn’t have to be built specific to the vendor’s equipment,” said Lane. “Secondly, their box has support for home networks built in. That means with one connection to the house they could have Internet access from any room in the house that has a phone line.”

Bristol chose a passive optical network because the equipment was cheaper and easier to maintain and new customers could be added quickly, said Lane. To add a new customer with a passive network, the utility provides the services from the head-end system and connects a fiber to the premise, said Lane. But with an active network, time-consuming connections have to be made to the electrical field components, he said. Electrical field components also make troubleshooting active systems more difficult.

Passive networks can provide analog cable services without expensive set-top boxes on each TV. This allows residents with standard cable to connect almost seamlessly, said Lane. When researching optical networks in 2001, Bristol staff found that most active networks provided digital services requiring a set-top box for each TV.

Before deploying an FTTH system, utilities need to make sure it suits their customers and particular situation.

“If I was a town or other community evaluating fiber-to-the-home, I would ask: where do we see ourselves in five or 10 years?” said Kutztown’s IT Director, Frank Caruso. “Do we see ourselves as wanting to attract high-tech, new-end business? And how are you going to attract them?”

B. Broadband over Power Lines

Manassas, Va., Finds Power Lines Work Well to Carry Broadband

Public Power Weekly
September 22, 2003

After a successful pilot project, the city of Manassas, Va., is poised to roll out a broadband over power lines (BPL) system that will allow citizens to access the Internet from any electrical outlet in the city. When Manassas was first approached by APPA about conducting the pilot project with technology provided by Main.net Powerline Communications Inc., Utilities Department Director Allen Todd and his staff were skeptical. But “the thing is, it works. That’s the bottom line,” said Manager of Energy Services Brett Massey, one of the project leaders along with Assistant Electric Director John Hewa.

Manassas officials on Sept. 8 opened bids for a franchise to offer high-speed (400-450 kilobytes per second) Internet service over the BPL system at what Allen Todd anticipates should be an affordable monthly rate. The city received some good bids, he said. The next step is to put the bid numbers into the utility’s business model and then put together a presentation for the Utility Commission and then the City Council. That process is “moving along very well,” he said.

The department is aiming to make its presentation to the commission before the end of the month, he said. Asked about the fast track treatment, Todd laughed and said, “We got [the bids] in at 7 o’clock and I went home at 2 a.m.” Assuming the commission approves, the utility is aiming to make a presentation to the City Council in October.

Rolling the system out to cover the entire city (population 35,000, with 2,500 commercial/industrial meters and 12,500 residential) should take about 120 days, the utility estimates. The utility already has a 60-mile fiber optic system in place that connects not only government buildings and schools but also—with help from a state transportation department grant—traffic lights throughout the 10-square-mile city. A home needs to be within about a half-mile of the fiber system for BPL access; about 80% of homes already are.

There’s no need to string wire to a lot of homes or dig trenches, so the main task in extending the system will be to install a repeater at every transformer and hand box (LV junction box). That entails two connections (one inductive) that can be done hot. It took about 20 minutes to show lineworkers how to hook up a repeater, Massey said. The utility estimates a two-man crew can put in three or possibly four repeaters an hour. The department has an engineer working on a standard, customized installation kit and procedure to make sure future installations are done properly and consistently.

Before requesting franchise bids, Manassas decided it didn't want to get into the Internet service business, so the city will install and maintain the BPL equipment used outside the home or business and the fiber optic backbone. If additional fiber is needed, the city will provide it. The municipal utility will provide emergency service on the equipment 24/7. The request for bids calls for the city to receive a percentage of revenue from the franchisee.

The franchisee is to provide all of the BPL equipment, including initial build-out and future replacement units, at no cost to the city. The franchisee also will provide the final network connection to the Internet, plus all of the content, all customer account management, help desk support, customer billing, network management and system monitoring.

The city's proposal calls for the franchisee to provide the Utility Department with notification of any power outages, using the reports available from the BPL network management system.

The system monitoring points to another major benefit of the BPL system: "By the time you walk across the room to pick up the phone, we'll know" that there was an outage at that location (of either electricity or Internet service), Todd told *Public Power Weekly*. A lineworker can fix either problem, he noted. When a repeater at a transformer loses power or otherwise goes out, it immediately shows up on a monitor at the BPL management center. The utility knows exactly which houses are connected to that transformer. If the power goes out at 3 a.m., Manassas will be able to fix it promptly rather than waiting for customers to call after they wake up, Todd said.

Utility Line Superintendent Tim Lawrence said the system also allows the utility to know when the lights go back on. "Before, we'd have to call customers to know if their power was back up." Also, some neighborhoods are fed by two different lines; if the BPL system shows outages only on one side of the neighborhood, the utility will have a leg up on where the problem is, Lawrence said.

Taking the outage notification system that far down in the distribution system was an unexpected bonus. Main.net didn't realize what a plus that was for electric utilities and didn't play up that feature, Todd said. The Manassas Utility Commission had asked the utility to look into a more sophisticated service restoration system, he said. Given the cost of more advanced outage systems, the BPL network might be worth it to utilities on that basis alone, he said.

Manassas has been testing the system for more than a year, with nine residential customers and one commercial account. "Results of the pilot program were favorable and demonstrated BPL as a viable technology for the delivery of data services," Manassas said in its request for franchise bids.

Two customers, one residential and one commercial, were considerably more enthusiastic in interviews with *Public Power Weekly*.

“It’s been wonderful. It’s a neat technology,” said residential customer John Evans, who works from home. It’s been very reliable—99.9%—and as fast as cable or DSL service but with more flexibility, he said, noting that he recently went out on his back porch to work. “It’s sort of a feather in the cap of Manassas,” he said. “It helps differentiate the city for homebuyers.”

The commercial customer, Robert B. Loveless Architects, terms the BPL system a major improvement. Architectural drawings that used to take half an hour to send are now transmitted in a flash.

“The thing most people like is you can take your computer anywhere and plug it in and have Internet access,” Todd said. Users are provided a BPL modem that they connect to an Ethernet port on their computer. The modem, which is small enough to fit easily into a laptop computer case, plugs into any electrical outlet. Customers’ accounts go with them as long as they use their BPL modems.

The pilot project uncovered a few glitches, but nothing major. After heavy rains, one repeater failed. When the ground-level transformer cover was opened, lineworkers discovered the repeater was flooded. The solution: cut a couple of pieces of plastic pipe to make a platform to keep the repeater out of any standing water. (The installation kit will include a small platform for the repeater.)

Another glitch involved the architectural firm getting a BPL modem that was too fast (about 1.5 mbs). The higher speed modem tended to hog the Internet connection, crowding out other users and slowing down their access, the utility concluded. The utility planned to provide the firm with a (relatively) slower modem.

WiFi (wireless Internet service) might be a little bit cheaper, Todd said. But the BPL system doesn’t present the security concerns of a WiFi system and does provide the major benefit of a distribution-level outage notification system.

Utilities have used transmission lines to communicate between substations for years, noted Todd, who previously headed transmission and distribution for Virginia Electric Power Co. However, while it worked for transmission lines, it didn’t work on distribution lines, where there was too much interference, he said. That’s why the municipal utility was skeptical going into the pilot project, but the city was looking for technology to use excess capacity on its fiber optic system to offer affordable high-speed Internet service.

“We’re very proud that this was accomplished through DEED [APPA’s Demonstration of Energy-Efficient Developments program],” Todd said. He describes the pilot project as a partnership between APPA (which provided funding through a DEED grant), Main.net (which provided the technology and network support) and the city of Manassas (which provided the electric distribution system, fiber backbone network, installation of the equipment and customer support).

Manassas tries to obtain a DEED grant for an R&D project every four or five years, Todd said. As is the case with R&D, “some projects work, some don’t. This one has been very successful.”

APPA members wanting more information can contact Brett Massey, 703/257-8352 or bmassey@ci.manassas.va.us.

C. Wireless

A Tale of Two Cities: Wireless That Works on a Large and Small Scale

by Cathy Swirbul

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When Owensboro Municipal Utilities in Kentucky expanded into the wireless broadband business in 2002, the utility did not anticipate its customers' exuberant response to the service. OMU conservatively estimated that 300 residences and commercial businesses in Owensboro and Daviess County would sign up the first year the service was offered. Instead, over 1,600 customers signed up.

"We even had one customer who put an 80-foot tower on his property at his own expense to get our wireless service," said Phillip Coleman, OMU's director of transmission, distribution and telecommunications. "The enormous growth can be attributed to the fact that we filled a void in the community, OMU's reputation for quality service and the support of our utility commission and employees."

OMU has had a fiber-optic network since 1997. The utility looked at several options, including extending fiber to each home or hybrid fiber-coax (HFC—a kind of physical connection used in networks for voice, video, and data) to further utilize the fiber system and bring affordable, high-speed Internet access to local residences and businesses. However, in this instance, expanding fiber or wire all the way to the home was not feasible because of cost. Wireless, using the unlicensed 2.4-gigahertz (GHz) radio frequency spectrum, was the answer.

To test the waters for this new service, OMU launched a pilot program from April to September 2002. Eight commercial and 30 residential customers were connected. During the pilot, the staff tested and learned how to install the equipment. The pilot cost the utility approximately \$50,000.

OMU's wireless system consists of 14 separate neighborhood node antennae (manufactured by Alvarion of Carlsbad, Calif.). In addition to the node antennae, OMU employees install smaller ones at the customer location. These smaller antennae, owned by OMU, are generally placed on the eave, in the attic or inside the home. The largest antennae are about 12 inches wide by 12 inches tall. The smaller antennae are about 5 inches wide and 12 inches tall, and can be placed inside a window. The strength of the signal determines which size is used. The customer pays a \$50 installation fee and is responsible for obtaining a network interface card for each computer using the wireless system. OMU includes the Internet charges on its monthly bill.

In early January, OMU was providing wireless service to 1,605 customers, with another 175 waiting to begin service. Residential customers pay \$25 per month for the high-speed (up to 512 kilobytes download/128 kilobytes upload) Internet service, which includes up to five e-mail addresses. Commercial customers pay between \$49 and \$184 per month, depending on the dedicated speed they want. OMU's commercial customers sign a two-year contract for service. Residential customers are served without a contract.

"We charge \$25 per month in order to provide quality, high-speed Internet access to the residents of our community," Coleman said. "Our price is particularly attractive to those paying \$23 for a dial-up service and tying up a phone line. Our service has also been popular with those paying less, as it is much faster than standard dial-up service and it's a continual connection."

"We wanted to provide high-speed, low-cost Internet access to Owensboro-Daviess County," said OMU Board Chair Louis Johnson. "We achieved this goal through a lot of hard work, innovative ideas and dedication."

OMU staff has learned that the best wireless systems are set up slowly and methodically so all system components function correctly. "We have developed a great working relationship with our vendor that has proven invaluable," Coleman said. "We meet quarterly with them for a system analysis and tune up."

The wireless experience has also demonstrated to OMU staff the value of working with departments across the utility, said General Manager Bob Hunzinger. "From the start, the program has received input from all affected departments," he said. "For example, the customer service staff has been a huge help in streamlining customer sign ups and handling calls. A task force meets weekly to discuss everything from customer service to installation issues. This input is invaluable."

The utility also keeps in touch with its customers through focus groups and surveys to measure customer service and determine their needs. The utility introduced online bill payment in response to customer comments offered through focus groups. Customer input also prompted OMU to look into expanded e-mail services.

OMU staff are looking for ways to connect additional customers.

"We would like to reach as many customers as possible," said Hunzinger. "This may mean partnering with other groups or organizations. We are also looking at 900-megahertz technology, which would allow us to reach areas with dense tree canopies that we can't currently serve."

The utility is developing ways to better handle customer calls, Hunzinger said. Currently, OMU's communications/telecommunications department handles calls. The utility plans to implement a call center or help desk for customers that will be manned continuously.

"We know that with additional customers come additional calls and questions, so we need to meet those needs now," Hunzinger said.

Carthage Water and Electric Plant's wireless system serves just 120 customers. Approximately 40 percent are businesses; the rest residential. The Missouri city's experience launching and maintaining its system, however, holds lessons for other utilities considering adding wireless Internet to their menus of services.

"We are extremely pleased with our wireless service because it meets a need for our community and the surrounding area," said Chuck Bryant, marketing and technical services director for Carthage Water and Electric Plant. "Many customers that we currently serve are outside city limits. These customers had no choice when it came to broadband service for their homes or businesses. We are doing well inside the city limits where we have competition from DSL and cable modem providers, but outside the city, we have customers building 80-foot towers on their property to get our wireless signal."

Carthage introduced dial-up Internet service in 2000. Simultaneously, the utility was installing 18 miles of fiber optic lines to support its SCADA system.

"As many communities know, when you start installing fiber, businesses start calling," Bryant said. "Those calls led us to develop a Gig-Ethernet Network over fiber optics. While we moved in these two directions to satisfy the needs of residential and large business customers, we had other residential customers and small businesses that needed broadband connections. Wireless was the best fit for us."

In May 2003, Carthage Water and Electric installed four Alvarion Breeze Access sector antennas on top of two of its water towers. The utility contracts with a local satellite dish sales company to install the customer premise equipment. The utility's wireless system has cost approximately \$40,000—an investment much smaller than that required to wire all water system sites.

"The wireless solution is a huge bonus because we are now in the process of installing a new water SCADA system and many of our wells are far beyond the reach of our fiber optic," said Bryant. "This allows us to communicate with our water system's wells that are outside the city limits and a few miles away from the fiber optic loop."

Customers pay \$39.95 per month for residential service and \$79.95 per month for business service, with a \$50 installation fee for the customer premise equipment. Three e-mail addresses come with these services. Additional addresses can be added for \$2.50 per month per address. The service includes 10 megabytes of Web site storage space with 100 megabytes of additional storage available for \$40 or 200 megabytes available for \$50.

One component of an effective wireless service is having a qualified staff, Bryant said. “Staffing is an area that can make or break service offerings like this. That doesn’t mean that you must hire 10 network administrators, but it does mean that you must have a well-trained staff. Looking at what we offer customers in terms of the quality and reliability of our electric systems, we all know skilled employees make a huge impact. The same thought should go into your broadband offerings. Today, customers are becoming more informed about broadband services and how they work. If your staff can match that knowledge level, you will quickly gain the faith of that customer.”

CWEP is also looking to expand its small broadband customer base, which picks up about 15 new customers each month. “To do that, we must constantly evaluate what we do,” Bryant said. “At this point, we are looking at those potential customers who are located in low lying areas that our wireless cannot currently reach. We use software that keeps track of each customer who failed a site survey due to a poor wireless signal. Once we have an area that reaches a certain level of failed surveys, we look to new technologies to reach that area. Currently, there is 900-megahertz, non-line-of-sight gear that could provide the solution.”

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D. Hybrid Fiber/Coaxial System

Muscatine Offers Full Range of Video and Data Services

by Cathy Swirbul

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A fateful meeting of local business leaders in 1996 changed the course of Muscatine Power & Water, opening up a new avenue of business for Iowa's largest municipal utility and strengthening the community's economy.

Muscatine's business leaders formed a task force that year to study the community's communications capabilities. Task force members learned that unless they acted, the community was destined to fall behind in technology because U.S. West (the incumbent telephone provider) and TCI (the incumbent cable TV provider) had no immediate plans to bring high-speed or broadband access to the community. The task force asked Muscatine Power & Water to consider getting into the telecommunications business.

Task force members recognized that broadband access was important to the community's businesses and to attracting an educated work force. Muscatine is home to the headquarters for tire re-treading giant Bandag Inc. and furniture manufacturer HON Industries. H.J. Heinz and Monsanto also have plants in Muscatine, as does a large privately held grain wet-milling process business.

To confirm the business decision, Muscatine's citizens voted on the issue in a referendum in July 1997. Of those who voted, 94 percent favored creation of a municipal communications utility. In November 1997, Muscatine Power & Water's board of trustees approved establishment of a communications utility. The utility now markets CATV products as MPW Cable and data/Internet services as MachLink.

Business and residential customers were asking for service even before construction began on Muscatine's communications system.

"Customers contacted us as soon as they learned about our construction plans," said Sal LoBianco, director of generation and telecommunications and 2002–03 chair of the American Public Power Association Community Broadband Committee. "When we were designing the system, HON Industries wanted data connectivity immediately. We built five miles of fiber backbone to HON Industries before building the rest of our system, and connected them with asynchronous transfer mode (ATM) switches. Bandag, Inc. requested point-to-point connectivity for data transport, so fiber spurs were installed to them before the rest of the system was deployed."

Three fiber loops serve city

Muscatine Power & Water began constructing its communication system in December 1997 and completed it in July 1999. The utility provides cable TV services, data/Internet services and municipal area network services, and direct fiber connections for high-bandwidth data, voice and video transport. The system consists of three major fiber loops starting and ending at the utility's administration/operations center: a north loop, middle loop and south loop. The north and middle loops each contain 144 fibers and the south loop contains 96 fibers. The fiber loops serve the two-way hybrid fiber coaxial system and municipal area network.

The hybrid fiber-coaxial system delivers cable TV and data/Internet services to homes and businesses. The services originate at the head-end, travel through fiber to a fiber-coaxial node and then through the coaxial cable distribution system to subscribers' homes. The system is two-way, meaning signals are also transmitted from the subscriber to the head-end. The two-way system allows advanced services, such as data transport, and pay-for-view and video-on-demand services. Each fiber-coaxial node serves approximately 125 subscribers. Muscatine's system has 95 nodes.

After the fiber system was installed, Muscatine Power & Water introduced an exciting parade of new services to its customers: the municipal area network in March 1998; cable television services (analog, digital and digital pay-per-view) in March 1999; and initial Internet services (cable modem and dial-up) in October 1999. Video-on-demand service was launched in April 2003 and wireless broadband service in July 2003.

Cable TV, modem are most popular services

Currently, Muscatine has 12 municipal area network customers. For its data/Internet service, the utility has 289 commercial cable modem customers, 88 commercial DSL customers, four commercial wireless customers and 72 commercial dial-up customers. The most popular services overall are cable television with 8,735 residential subscribers (72 percent of the local market) and residential cable modem with 3,897 subscribers (32 percent of all customers). Muscatine Power & Water's total customer base includes 10,900 electric customers and 8,890 water customers.

The municipal utility's communications business eventually edged out the competition in Muscatine.

"The incumbent cable system at our launch was TCI," said LoBianco. "TCI sold to AT&T, then AT&T sold to Mediacom. In January 2003, we purchased the remaining Mediacom System in Muscatine. Prior to our acquisition of the Mediacom Muscatine system, we had about 5,700 subscribers or about 65 percent of the Muscatine video market. We also had competition for

broadband services from a local ISP, which had been in the market since 1995. They had the majority of dial-up customers and offered DSL in conjunction with U.S. West (now Qwest). We purchased their customers in November 2001. Prior to the purchase, we had about 2,300 cable modem subscribers—the majority of the broadband market.”

Quality products and service, rather than the lowest price, enabled Muscatine to attract additional customers, LoBianco said. “We provide great picture quality, reliable and fast cable modem service, and around-the-clock service and support,” he said. “We also offer the convenience of one bill for all services. The service and support, of course, is provided from an office with a local presence and with local people. We have also registered high in customer satisfaction for many years in our annual customer survey.”

Hiring, price competition present obstacles

Development of Muscatine Power & Water’s communications business has not been without obstacles. One of the utility’s biggest challenges has been recruiting qualified technical personnel to work in its data/broadband business, according to LoBianco. In addition, competition has prevented the utility from passing on programming rate increases to customers, which has encumbered its financial performance. The utility’s small subscriber base means the fixed costs of personnel and equipment must be spread over a limited base.

“In retrospect, I would have preferred that we had launched all our communications services at once because of the advantage and efficiency of being able to immediately sell the customer a bundle of services. This would have lowered our marketing and installation costs,” LoBianco said. “Also, it has taken a lot of my time and my staff’s time to understand the legal and regulatory issues associated with communication services. We spend a great deal of time keeping up with the changes in technology and attempting to analyze the cost benefit of implementing new technology as well.”

Still, Muscatine Power & Water’s creation of its communications utility has accomplished all that the utility had hoped. “We are helping to keep Muscatine’s core industries competitive by providing advanced services and having the services available to help them recruit a qualified work force,” he said.

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