

New Roles for Local Distribution Utilities: An Array of Broadband Services

Presentation by

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I. Who are Public Power Utilities and What Do They Do?

Before discussing new uses of electric distribution plant by public power systems in the United States, I will take a few minutes to describe who and what public power systems are. This is necessary because the term public power is often used incorrectly. Public power systems are lumped together with federal power marketing agencies, the Tennessee Valley Authority (TVA), and rural electric cooperatives even though they are very different economic entities. The history, nature, purpose, governance structure, and economic and political accountability of these other sectors differ significantly from public power's.

Public power systems are electric utilities that are owned and operated by state or local governments, primarily by municipalities. They are run as non-profit, public enterprises. Public power systems were among the first electric utilities established in the U.S. in the 1880s, and the majority of those operating today were established before the 1920s. The major motivations for forming municipal electric systems included: dissatisfaction with the prices and service of incumbent providers; delays in private provision of service; and economies of scope.

In contrast, rural electric cooperatives are *private*, non-profit entities. They were first established in the 1930s as part of a national rural electrification program supported by the federal government. Federal power projects (the power marketing agencies and the TVA), though government owned and operated, are part of larger, multi-purpose programs started in the 1930s. Their purpose includes flood control, regional economic development, and rural electrification, in addition to the supply of electricity.

In 2002, there were about 2,000 public power systems in the United States that served about 19 million retail customers. This was approximately 14 percent of all retail customers served by utilities. Similarly, public systems provided more than half a billion (about 17 percent) of the 3.5 billion megawatt-hours sold at retail. Finally, they accounted for about 10 percent (about 93 thousand megawatts) of all installed capacity, and about 10 percent (almost 380 million megawatt-hours) of all electricity generated by utilities and power marketers.

Two important facts to keep in mind in regard to the discussion to follow are: (1) the average size of public power utilities; and (2) the other services they provide. Public systems are typically very small; their median size, in terms of customers served, is about 1,700 customers. Table 1 provides a breakdown of these utilities and illustrates this fact:

TABLE 1: Distribution of Public Power Systems by Customer Class, 2002

<u>Customers</u>	<u>Number</u>
0 to 10.....	66
11 to 1,000.....	609
1,001 to 2,000.....	387
2,001 to 4,000.....	325
4,001 to 10,000.....	330
10,001 to 20,000.....	146
20,001 to 40,000.....	80
40,001 to 100,000.....	40
More than 100,000	24
Total.....	2007

Second, a relatively large proportion of public power systems also provide at least one other utility service. In a 2001 survey, 767 municipal electric utilities reported that they provided at least one of these other services:

**TABLE 2: Other Services Provided
By Public Power Systems**

<u>Other Service</u>	<u>Number Providing</u>	<u>Percent of Respondents</u>
Water	725	95%
Sewer	682	89%
Wastewater	544	71%
Gas	139	18%

II. Broadband Services Offered by Public Power Systems

Broadband is generally defined as an advanced communications system in which a wide band of frequencies is available to transmit information through a single portal, such as fiber optic cable, for example. It includes voice, high-speed data, video, and other interactive text delivery services. The term is also used to define a particular type of service offered by utilities. A communication link *only* is offered—without content such as Cable TV or Internet Service—to customers at speeds greater than 200 kilobytes per second at particular business sites, for example, business-to-business connections.

In 2002 there were 569 public power systems that employed some type of broadband service, either internally for utility and city operations or externally to local citizens. The majority of external services that use distribution facilities might be described as “add-ons”—services that are physically distinct from electric distribution services except for the use of some common facilities. However, there is a new use of electric distribution plant that includes the wires themselves. The following table shows the ways municipal systems were using broadband in 2001 and 2002.

**TABLE 3: Number of Public Power
Systems Providing Service**

<u>Services</u>	<u>2002</u>	<u>2001</u>
<i>Internal</i>		
SCADA*	373	323
Municipal data network	218	197
AMR**	206	147
Voice	100	90
<i>External</i>		
Fiber leasing	156	144
Internet Service Provider***	134	130
Broadband	128	114
Cable TV	109	105
Cable modem, DSL****	76	71
Wireless network	39	30
Local telephone	43	37
Long distance telephone resale	36	33
Video on demand	10	9

* Supervisory Control and Data Acquisition

** Automated Meter Reading

*** Service provided by utility or through third-party contracts

**** Digital Subscriber Line

The most common use is for their SCADA (Supervisory Control and Data Acquisition) systems in order to enhance the operation of the electricity distribution system. When broadband technologies are being planned, or are already in place, a logical extension of their use is for municipal data services to improve communication within and between city departments (police, fire, schools, libraries, etc.). Also, the technology can be used to enhance community services such as hospitals and related care. Though these are the most extensive uses of broadband by municipal electric utilities, the ones that usually received the most popular attention are for cable TV and Internet service provision. In 2002 there were 134 utilities that provided Internet service and 109 that provided cable TV service. In many cases utilities provided both.

The Electric Plant Board in Glasgow, Kentucky, provides a good example of the types of broadband service municipal electric utilities are offering. The city is a rural community, and its utility serves about 7,000 retail electric customers. Glasgow is especially significant because it was among the first municipal electric systems in the nation to offer external broadband service over a decade ago. In June 1989, the utility began by offering cable TV and since has gone on to offer services such as cable modem, Internet services, fiber leasing, and local telephone service as well. The city's broadband network reaches every home in the community. It allows for a city-wide computer network that connects city departments, elementary schools and high schools, and local businesses and residences. It is also used to synchronize traffic signals. Glasgow also uses its broadband system for the various internal utility and city functions listed in Table 3.

Most municipal electric systems that provide external broadband services such as cable TV, Internet service, and modem/DSL service are relatively small. Tacoma Public Utilities in Washington, however, is an example of a large public power system that offers these services.

The most innovative use of an electric distribution system is going to be rolled out next week. The municipal electric utility in Manassas, Virginia, which serves about 14 thousand retail customers, will be offering broadband service over its power lines, or BPL service. Next week three neighborhoods will be plugged into the service, and the city hopes to have all residences and business connected within three to four months.

BPL can provide access to high-speed Internet service at a speed of about 500 kilobytes per second for 2.5 Mb rated devices and more than 1.5 Mbps for 14 Mb-rated devices. The new utility service, called "Zplug", will allow residential and commercial subscribers to plug a modem into any electrical outlet and have access to the Internet for their computers. The Manassas electric utility is the first utility in the nation to offer such service to all its customers.

The BPL program works in conjunction with the city's existing 60-mile fiber optic network, which is used to monitor and control the city's electric and water systems. Additional equipment needed to provide the service includes a "repeater" at every transformer and a hand box (LV junction box).

The city launched a pilot project in the summer of 2002 and had about a year of positive experience with the technology before it decided to have the utility install additional equipment and offer the service to all residents. It also decided

that it didn't want to be in the Internet business so the city utility will install and maintain the equipment for the BPL system, but the Internet service is being franchised out.

Some benefits of the service include: (1) reliable, high-speed Internet service; (2) no additional wiring; (3) a new electrical outage notification system; (4) Internet service is always on; (5) quick deployment; (6) less expensive than fiber; (7) not susceptible to interference from buildings or terrain; and (8) joint construction and maintenance with electric power; among others.

III. Why Public Power Systems are Providing Broadband Services

Public power systems are offering broadband services for reasons that are strikingly similar to ones that led them into the electric power business. The impetus comes from grass-root, local community concerns about: (1) economic development; (2) the pace at which broadband technologies are being introduced; (3) the quality of service of the incumbent provider; and (4) prices charged by the incumbent provider. These concerns usually dovetail with community views about (5) the role of their local governments and (6) the potential for leveraging current utility operations. Consequently, there is rarely a single reason for a municipality getting into the business. All factors are more or less present. The one or ones that provide the major impetus seem to depend on the issues a local community happens to be most sensitive to at a particular time. Also, a community may start out with a single motivation, but once it starts exploring the feasibility of getting into broadband one motivation usually leads to another. The range of potential benefits broadens.

Glasgow's Electric Plant Board (EPB), again, provides a good example. The initial motivation for building its 120-mile bidirectional, broadband cable network was to improve the monitoring and control of its electricity transmission and distribution systems. In the early and mid-1980s the Tennessee Valley Authority, which sold wholesale power to EPB, was encouraging its customers to find ways to shift some of their loads to off-peak periods. The EPB was also concerned about responding to competitive pressures. It decided that a new broadband network for improved load management would be one useful way to respond and to prepare for the future.

In the course of meetings about the new communications system, the city and utility realized that the system could probably be used to provide cable TV service for significantly less than the incumbent supplier was charging. In

addition, the broadband communications system could be used to provide high-speed Internet service, competitive local telephone service, and other local economic development needs as well.

There are similarities between the paths the cities of Glasgow and Tacoma took in deciding to have their respective utilities offer broadband services. In 1992, faced with restructuring of the electric utility industry and the prospect of increased competition, Tacoma's utility began looking for more ways to improve the efficiency and reliability of its electric distribution system. In assessing its alternatives for an improved communication system for its electric distribution network, the utility realized that non-electric services such as cable TV could be provided with little incremental costs. Coincidentally, in the mid-1990s a significant number of customers of the incumbent cable TV were dissatisfied with the quality of service they were receiving. Tacoma decided to build a broadband network that could be used to provide cable TV services as well as provide for increased efficiency and reliability of its distribution system. It started providing non-electric broadband services to the community in 1997 through its "Click! Network" program.

Customer dissatisfaction with incumbent providers of broadband services or the uncertain prospect of any service at all are often the leading reasons why public power systems enter the business. A study ("Economic Development and Public Enterprise: The Case of Rural Iowa's Telecommunications Utilities," *Economic Development Quarterly*, May 2000) by University of Iowa professor Montgomery Van Wart and his colleagues found that the reasons Iowa cities decided to start offering broadband services were familiar ones: lower prices and improved quality of service. The study covered 265 of Iowa's approximately 950 cities, and "more than twenty-five in-depth interviews with local and telecommunications industry experts." In the cable TV sector, deregulation had "not brought significant competition" and "competition in the local telephone market [was] minimal." Annual increases for cable TV service were about seven percent, and "some regional telephone providers ... [withdrew] their local experts to service hubs to cut costs."

The city of Hawarden illustrates the problems faced by Iowa cities. It is a town with a population of about of 2,500, and its citizens were dissatisfied with the quality of broadband services and concerned about their community's future. In 1994, 96 percent of the 63 percent of the electorate that voted favored an "all-purpose city communication utility." Following this directive, the city utility—which first started providing electric service in 1894—constructed a fiber optic

system “completely bypassing the outdated copper wire system” of the private, incumbent provider.

As Table 1 shows, most public power communities are relatively small, and, as a consequence, do not have modern broadband services or competitively priced services usually available in larger cities. In the worst case, small towns may have limited or no services at all. Such communities usually do not want to wait with uncertainty about when private providers would enter their markets or upgrade existing services. Again, Hawarden serves as an example. In addition to being dissatisfied with the incumbent service provider, Hawarden wanted a modern broadband infrastructure—it did not want to become a stagnant, “backwater” town.

Finally, for many public power communities expansion into broadband was simply part of what local government does anyway: it provides basic infrastructure services for modern, daily living and to promote economic development. As shown in Table 2, a large proportion of public power systems provide water, sewage, wastewater, and gas service as well as electric service. Offering a broadband infrastructure and related services is viewed as a logical part of local government services.

For example, Cedar Falls Utilities in Iowa began providing broadband services in 1996 and today offers its citizens cable TV, Internet service, cable modem/DSL service, and other services. The utility—which was established in 1913 and which also provides gas, water, and wastewater services—views the provision of broadband services as a “logical part of [its] role, which has always been to provide the infrastructure needed to support economic development and the quality of life in Cedar Falls.”

From an economic development perspective, Cedar Falls believed that a broadband infrastructure and related services were “vital to [its] ability to draw high-tech businesses and jobs.” The services allow the community to be competitive as a business center nationally, and globally as well.

IV. Current Public Policy Issues

Any discussion of public power systems in the broadband business would be incomplete without some reference to two major public policy issues. One is ongoing, and the other will be decided this year. The first is the controversy over the economic efficacy and legitimacy of public power systems offering broadband services, and the other involves legal challenges over the authority of states to prohibit their local governments from offering broadband services.

Economic Efficacy and Legitimacy

Several reports, typically sponsored by private, incumbent providers of broadband services, challenge the economic legitimacy of municipal governments entering broadband business along with the effectiveness (economic efficiency) of those who have entered. The criticisms are similar to the ones opposing state and local provision of electric utility services. A survey of these criticisms can be found in *Does Government belong in the Telecom Business* (Progress & Freedom Foundation, Progress on Point, 8.1, Washington, D.C., January 2001). For an opposing view see *Old Snake Oil in New Bottles: Ideological Attacks on Local Public Enterprises in the Telecommunications Industry* (American Public Power Association, Washington, D.C., October 2001); and *Community Broadband: Separating Fact from Fiction* (American Public Power Association, January 2004).

Legal Challenges: “What does the word ‘Any’ mean anyway?”

About a dozen states have directly or indirectly prohibited municipalities from offering broadband services, and about a half-dozen others are debating the question. State prohibitions have been erected despite the fact that the language of the 1996 Telecommunications Act says “No state or local statute or regulation, or other State or local legal requirement, may prohibit or have the effect of prohibiting the ability of any entity to provide any interstate or intrastate telecommunications services.”

The city of Abilene, Texas, interpreted these words to mean that it could begin offering broadband services despite a state prohibition on local governments doing so. The city petitioned the Federal Communications Commission to install its own broadband network, but private phone and cable companies challenged the city’s petition contending that Congress did not intend the term “any entities” to include local governments. The Commission ruled against the city, and the federal appeals court in Washington, D.C. let the decision stand.

Meanwhile, federal district courts in Virginia and Missouri and the Nebraska Supreme Court have ruled in favor of municipalities. The Missouri Attorney General appealed the case to the Supreme Court, and the court agreed to review the case. Oral arguments were heard on January 12, 2004, and a decision is expected this spring.