

Executive Summary

The Public Service Commission has prepared this publication that includes two reports:

The seventh biennial report to the Legislature is required under Wis. Stat. § 196.196(5)(f). The report contains updated information and reviews new services and technologies related to the deployment of and investment in telecommunications infrastructure throughout the state. This infrastructure report generally looks at deployment as of the end of 2006. This report also comments on the use of advanced telecommunications infrastructure for distance learning, libraries and access to health care and contains a section updating Wireless E911 grant activities.

The Universal Service Fund (USF) report (Part 5 herein) is being filed in compliance with Wis. Stat. § 196.218(5r) and contains information on programs funded by the state USF. A brief description of the federal USF is also included.

The appendix of the report contains appendices A-D that provide maps, information on the infrastructure report preparation, details on USF grants and alternative regulation plans. Appendix A contains Geographic Information Systems (GIS) maps that show the geographic location of various infrastructure elements and services in the state, along with USF grant recipient locations.

Since 1994, when the legislation passed that created these reporting requirements, technologies and provider makeup continue to change, transforming and altering the telecommunications landscape. Consequently, some issues have arisen that alter the concerns about infrastructure or universal service that existed in 1994. In this report, the Commission notes these changes and identifies some concerns that should be considered as the industry further evolves.

Advanced Infrastructure for Designated Purposes

Wis. Stat. § 196.196(5)(f)1.a.-d. requires reporting on the use of infrastructure for distance learning, interconnection to libraries, access to health care, assistance to persons with disabilities and ISDN. Based on the tracking of these items, since 1993 Wisconsin Act 496 (Act 496) was passed, the Commission notes that progress has taken place. The Commission recommends future reporting on specific infrastructure uses only when issues on availability or deployment exist. Evidence suggests that the telecommunications network is no longer a significant limiting factor to providing service such as distance learning, interconnection of libraries, access to health care and services to persons with disabilities, although in some areas of the state the availability of broadband for these entities is still limited. Rather than infrastructure, the most significant limiting factor for providing services mentioned is cost, for both providers and customers, and the development of equipment that will allow individuals in the home to more effectively use the telecommunications infrastructure.

The State of Wisconsin's Technology for Education Achievement (TEACH) initiative has been very successful and made resources available to provide two-way full motion video to nearly all K-12 school districts and technical colleges.

The Internet continues to be the medium of choice for distance education programs in higher education. With more reliance on the Internet there have been requests for increases in high-speed Internet capacity. Nearly all libraries have access to the Internet with access continuing to grow. One library has established a full-motion video-conferencing facility for distance education. Capacity constraints are increasing as the demand for high-speed service grows. Development of wide area networks between libraries has been a major benefit to the expansion of the automated circulation process.

In health care, there is an increased use of existing high-speed networks between hospitals and clinics; however, the number of dedicated high-speed telehealth networks remains limited.

Studies that track the use of telemedicine have not mentioned that the telecommunications infrastructure is a problem. Instead, they continue to mention factors related to cost and slow adoption, licensing and lack of standards. Meeting the goal of delivering medical service to individual premises requires increased investment along with increased usage to create economies of scale to pay for the networks.

For individuals with disabilities, the focus remains on the development of assistive technologies that enable the more effective use of telecommunications infrastructure. The changes in technology make it difficult to assure that all devices and programs that use the telecommunications network are accessible to persons with disabilities.

Both incumbent providers and newer competitive companies have invested in infrastructure in Wisconsin to provide service to education and health care providers.

Infrastructure Deployment

This section documents the status of infrastructure mainly of Incumbent Local Exchange Carriers (ILECs) and Competitive Local Exchange Carriers (CLECs). Wis. Stat. § 196.196(5)(f)1.e. and f. requires reporting on Integrated Services Digital Network (ISDN) deployment and other infrastructure investments identified by the Commission. Although the statute requires reporting of deployment of ISDN, new technologies such as Digital Subscriber Line (DSL), Fiber to the Premises (FTTP), and Voice over Internet Protocol (VoIP) are superseding ISDN deployment.¹

Tables, figures, and maps throughout the report reflect data reported by providers. The report shows progress in ILEC switching, outside plant and advanced services.

¹ The Commission recommends the specific reference to ISDN in Wis. Stat. § 196.196(5)(f)1.e. be replaced with a more generic reference to technologies.

Switching information is shown based on the regulated side of the network, although more switches exist on the deregulated side of the network.

Outside plant includes copper, fiber, and other electronic equipment. Fiber optic facilities continue to grow in the state with a number of fiber facilities replacing legacy copper networks using Fiber in the Feeder and Fiber to the Premises (FTTP) designs. In addition to the ILECs, CLECs and CATV providers also have deployed fiber facilities in communities across the state.

Deployment of advanced services, including DSL technology that offers high-speed connections over copper lines, continues to expand with a number of ILECs across the state offering DSL to 100 percent of all customers within their service areas. In addition, Digital Loop Carrier (DLC) deployment often involves further fiber deployment and brings advanced services closer to the customer.

Competition continues to evolve. There were 161 CLECs certified to provide service at year-end 2006, although less than half of these companies were actively providing service. CLEC services range from local service to high-speed Internet to dark fiber. A number of CLECs have deployed networks of fiber facilities across the state and a number of local municipalities have also been certified as competitive telecommunications providers. ILECs and CLECs are impacted by competition from cable companies, wireless services and VoIP type services. Both ILEC and CLEC access line losses may be attributed in part to the continued growth and marketing of the VoIP, wireless, and CATV providers.

Broadband technology deployment continues to grow with the main providers of broadband service being ILECs, CLECs, CATV, and wireless providers. The definition of the speed of broadband has always been in debate. Both the Federal Communications Commission (FCC) and Federal USDA Rural Development Agency (RDA) under the Rural Development Utilities Program (RDUP) are looking at revising the definition of broadband as increased speeds of service offered to customers become more common. The FCC is considering the collection of data based on a range of speed definitions to allow for greater differentiation among high-speed services.

Many companies have invested in fiber and provide innovative services; examples of this deployment can be found across the state. In addition, a state program was recently launched to assist in broadband deployment; this is the "Internet Equipment Tax Credit and Exemption Program" administered by the Department of Commerce. Nine companies were granted tax credits and exemptions in this program to help spur broadband deployment in rural Wisconsin.

The data in the Infrastructure Report covers mainly ILEC and CLEC infrastructure; CATV provider information is shown where available. Minimal information is available on wireless and satellite technologies, which are a growing part of the broadband footprint in the state. Despite the problems faced with data collection, it is useful to track ILEC and CLEC investments in infrastructure and deployments of technologies. Documenting trends and changes in the industries provides information that can be useful for regulatory decisions and legislative directives.

A number of states have undertaken statewide broadband inventories. The Commission recommends that the legislature consider completing an inventory of this type for Wisconsin. Such an inventory would benefit consumers and give the Legislature information to serve as a basis for determining broadband policy for the State of Wisconsin.

E911 Wireless Grant Program

Another enhancement to infrastructure and improvement of service to citizens of Wisconsin is the implementation of a wireless 911 system. 2003 Wisconsin Act 48 created the three-year grant program, administered by the Commission, under which local governments and wireless telecommunications service providers are reimbursed for certain costs associated with establishing an enhanced wireless 911 system. Enhanced 911 service routes a wireless 911 call over a dedicated network, independent of the public switched network, and automatically reports the name and telephone number corresponding to the calling party's wireless telephone to the call-taker at the public safety answering point. Most importantly, the enhanced wireless 911 service also reports the location of the calling party by geographic grid coordinates. Grants were awarded to 68 counties and 8 wireless carriers. Wireless E911 service, with its location identifying capabilities, is now implemented in 59 counties. An E911 status map is provided in Appendix A of this report.

Universal Service Fund

1993 Wisconsin Act 496 established the USF to ensure all state residents have access to essential and advanced telecommunications services (Wis. Stat. § 196.218). The fund not only assists customers in areas of the state that have relatively high costs for telecommunications services, low-income customers, and customers with disabilities, it also assists in the deployment of the advanced service capabilities of a modern telecommunications infrastructure throughout the state. Programs under the broad umbrella of the USF consist of technology and consumer-oriented programs managed by the Commission, and some technology and education-oriented programs that direct funding to other state government entities. This report focuses on the Commission portion of the USF.

Although the Commission develops the overall policy and procedures for the telecommunications-related portions of the USF, and manages and operates several of the programs, it is required under state statute to contract with a private firm to administer the fund. The USF Council, also established by Act 496, advises the Commission on the administration of the USF and on proposed rule changes. Although 2007 WI Act 20 removed the \$6.0 million budget appropriation cap for the Commission portions of the USF in 2007, the USF budget for FY07 and FY08 remains at \$6.0 million for each year. Telecommunications providers fund the USF by assessments on providers' gross intrastate operating revenues as reported to the Commission.

Nine Commission programs (see Wis. Admin. Code ch. PSC 160) are currently funded by the USF. These are:

- Telecommunications Equipment Purchase Program (TEPP)
- Two-line Voice or Speech Carryover
- High Rate Ceiling Credits
- Lifeline Program
- Link-Up Program
- Newline for the Blind (this is a DPI established and managed program)
- Nonprofit Groups – Access Programs or Projects
- Medical Telecommunications Equipment Program
- Public Interest Payphones

Tables and figures included in Part 5, and maps and tables in Appendices A and C summarize the expenditures and grant details for the fund.

Beyond the Commission-administered USF, there are some federal USF programs that also serve to support universal service for customers in Wisconsin. The FCC is in the process of reviewing the rules for the USF. The Commission will monitor these changes and provide comments when appropriate.

The Commission recommends that the existing requirement for an annual USF report be changed to a biennial reporting requirement and that future USF reports be combined (as was this one) with the biennial Infrastructure Report.

Conclusions and Recommendations

These reports will continue to document the status of existing infrastructure, trends and advances in technologies and USF program statistics. The Commission will continue to monitor changes in the industry and alert the Legislature to concerns and new issues as they are identified. In addition, the Commission will point out concerns that may arise with reporting and data collection caused by the divergent state of regulation and oversight of the telecommunications landscape.

Previous infrastructure reports proposed changes to Wis. Stat. § 196.196(5)(f)1.a.-f. to remove some of the current statute language on ISDN and include, rather, a more neutral reporting requirement on changing technologies. These recommended changes made here again, will help make the report more flexible.

There has been progress in both fiber and broadband network deployment across the state. Wisconsin has a robust network of fiber backbone facilities in place along with a number of FTTP designs and wireless networks in place. These and other fiber networks are used extensively and invested in by all types of network providers. Consumers are seeing the benefit of having these advanced services in place. It remains important to track where broadband service is available and to

identify providers and the types of services they are offering. The Commission recommends that the Legislature consider completing an inventory of broadband deployment and capabilities for Wisconsin.

Data is collected from ILECs and CLECs through company-filed annual reports and data requests. Data is also requested from CATV providers. It remains difficult to collect data and identify those providers not under Commission jurisdiction and, as a result, it is not possible to give a complete picture of the infrastructure present and the services available throughout the State of Wisconsin. As in the past, the Commission recommends statutory changes to permit better infrastructure tracking. With the information that could be obtained, the data in this report provides a baseline for infrastructure and services throughout the state.

In addition, consumers must be kept informed of their responsibilities and have a resource for help when problems arise with their communications services. The Commission will continue to prepare and make available information so that consumers have resources they need and materials that can inform them of how they may be affected by new technologies.

Recommendations

The Commission recommends the following items be addressed by the Legislature:

- 1) A change to Wis. Stat. § 196.196(5)f. reporting requirements, including replacement of the specific ISDN mandate with a more neutral technology reference.
- 2) Completion of a broadband inventory for the state of Wisconsin.
- 3) Establishment of statutory authority under Wis. Stat. § 196.25 to allow the Commission to collect data from CATV, wireless and VoIP providers so that the Legislature and the public have complete and relevant information covering all areas of the communications industry. In addition, a provision should be added to assess a penalty or other form of redress where providers do not respond to data requests as required under Wis. Stat. § 196.25(3).
- 4) A change of the annual USF reporting requirement to a biennial requirement so that future USF reports and infrastructure reports can be jointly prepared and filed.

The Commission appreciates the opportunity to provide this information to the Legislature and will continue to provide the Legislature with updates and new developments on both infrastructure and universal service fund matters.