Wiring Minnesota: New State Goals for Telecommunications

REPORT SUMMARY

November 16, 1989

Reprinted May 1991

Public affairs research and education in the Twin Cities metropolitan area
CITIZENS LEAGUE REPORT

WIRING MINNESOTA:

NEW STATE GOALS FOR TELECOMMUNICATIONS

REPORT SUMMARY

Prepared by:

Telecommunications Committee

Milda Hedblom, Chair
Mark Spurr, Vice-Chair

Approved by the Citizens League Board of Directors

November 16, 1989

Reprinted May 1991

Citizens League
708 South Third Street
Suite 500
Minneapolis, Minnesota 55415
(612) 338-0791
REPORT SUMMARY

Telecommunications—connecting people and places by the electronic transmission of voice, data, or video images—is an area of exciting technological growth. This new technology and changes in the marketplace create exciting opportunities for Minnesota.

In our study, we looked at these questions:

- How can Minnesota acknowledge and capitalize on new realities in the telecommunications industry that may affect our economic prosperity, while at the same time protecting the public interest?
- Given changing technology, are changes needed in state telecommunications policy, including regulation and structure, to encourage timely and geographically widespread capital investment and to ensure appropriate degrees of access?

MINNESOTA'S SYSTEM OF TELECOMMUNICATIONS

Telecommunications describes a broad landscape that goes well beyond voice phone service. For example, it includes transmission of video and data, and the integrated transmission of voice, data, and video. It also includes the technologies of cellular transmission, whether mobile or fixed, and of cable communications.

New Competition

Modern telephone networks are made up of three elements: (1) the local network, (2) the long-distance network, and (3) customer premises equipment. At one time, AT&T enjoyed an end-to-end monopoly including all three elements. Over the last 20 years, a series of decisions by regulatory agencies, courts, and other policymakers has made competition possible for long-distance service and for customer premises equipment. AT&T's monopoly on long-distance service was among the first to go. Furthermore, the monopoly of local telephone companies on local service is no longer the exclusive franchise it once was. Large businesses can use satellites or alternative service providers to place their long-distance calls, effectively bypassing the local company.

Investment in Facilities

Much of the potential of telecommunications is made possible by technological advancements. For example, the national voice telephone network is built on millions of miles of copper wires. The next generation of networks is being built with optical fiber. Fiber optic is based on beams of light transmitted through glass fibers. It has superior capacity and reliability when compared to pairs of twisted copper wire. While a bundle of 144 optical fibers can carry 80,000 two-way voice conversations, a similar-sized bundle of twisted copper pairs can transmit 3,456 conversations. By one count, 3,800 miles of fiber optic have been installed in Minnesota.
US WEST Communications (familiarly known as Northwestern Bell) is by far the largest of the 94 companies providing local telephone service in Minnesota. It operates about 1.6 million access lines. In recent years, most of the telephone companies operating in Minnesota have been installing modern digital switching equipment in their 699 central offices and high capacity fiber optic lines to connect those offices. Digital switches are essentially computers and are needed to offer advanced services.

However, more than 300 of those local offices still use old electro-mechanical switches which are not capable of providing advanced services. US WEST alone currently operates 103 electro-mechanical central offices. Using data from the Minnesota Telephone Association and a Citizens League survey of companies, we found:

- While three-quarters of the subscriber lines operated by the small independent companies are fully digital, about one-third of US WEST's lines are fully digital. Furthermore, 48 of the independent companies are fully digital.

### THE POTENTIAL OF NEW TECHNOLOGY

In 1990

The marriage of computer technology and telephone service in recent years made it possible for telephone systems to send large amounts of data at high speeds. As residential or business telephone users, we know that we can't simultaneously send data from our computer and carry on a conversation over the same telephone line. If you need to do both on a regular basis, you rent two lines. New technology, which is known as Integrated Services Digital Network, or ISDN, allows a user to divide one line into several channels.
This technology, as well as other advances, opens a wide range of options:

- Health monitoring in patients' homes, with data transmitted to physicians' offices or hospitals.
- Interactive instruction between different schools, and between offices, homes, and schools.
- Access to data bases, library collections, bibliographies, and employment want ads.
- A wide selection of movies and other entertainment sharing the same private residence line with voice and data transmission.

**Looking into the Future**

While the basic and advanced versions of ISDN now under development create enormous capacity, it is possible (and we think desirable) to develop networks with even more capacity. Broadband networks are telecommunications networks with enormous capacity for high-speed, simultaneous transmission and integration of voice, data, and video. How fast? A broadband system could transmit a copy of *War and Peace* in 1/16 of a second.

Today, video transmissions, such as movies, sports, and interactive instruction are the only home services requiring broadband networks. But some observers have suggested that the enormous capacity created by broadband networks would stimulate the development of new services, particularly where the integration of video expands people's capabilities. In a sense, every home or workplace could be a studio to transmit and receive information in different forms.

**CONCLUSIONS**

- In an Information Age, the capability to access information and the easy transfer of information are critical to Minnesota's goals: improved public education and health, better government services, economic growth, political awareness, efficiency and productivity, and reduced need for transportation.
- Telecommunications is an important tool to achieve these goals. It is becoming increasingly critical in all aspects of our personal and business lives.
- Realizing the full potential of these advanced services requires the deployment of broadband, digital transmission networks capable of high-speed data transfer.
- Providing statewide access to a broad range of telecommunications services requires the development of facilities and networks serving the entire state.
- The private sector has already demonstrated that it will respond to the needs of certain segments of the market and certain parts of the state. We are concerned about those parts of the private market or areas of the state where the private sector will be slower to introduce new services.
- Telecommunications networks are the "highways" of the next century. Each community, including those southwestern Minnesota places shown on the next page, will need telecommunications highways that will allow traffic to reliably come and go, although the traffic volume may differ.
STATE GOALS: RECOMMENDATIONS

By being among the first states to construct advanced networks and paying attention to the need for programming, Minnesota could be in a position to supply equipment, services, and programming to other states and countries.

Our goal for telecommunications in Minnesota is:

To deploy high-speed, broadband telecommunications networks in Minnesota and to ensure an equitable distribution of broadband networks and services in the state.

We recommend policy changes and strategies that are intended to direct and accelerate an incremental process of development that is already underway.

We recommend:

- Minnesota should adopt two goals—one mid-term and the other long-term—for deployment of telecommunications systems:

  1. During the next five years, promote deployment of statewide telecommunications networks that enable digital connectivity to the home; and

  2. During the next 15 years, promote deployment of broadband, high-speed, digital telecommunications networks to bring enhanced services to the people of the state.

- The cost of this new infrastructure should be shared by all classes of users (including other telephone carriers), except that the impact on low-income households should be taken into account.

- Advanced network services, and the terminals and other customer premises equipment necessary to access those services, should be available to those able and willing to
pay the price. Reasonable substitutes for individual access to these networks should be made widely available through libraries and schools.

STRATEGIES FOR ACHIEVING STATE GOALS:

If telephone companies are to introduce new plant and services fast enough in all parts of Minnesota, several things must happen. First, the state should allow telephone companies to earn returns that are sufficient to match the additional risk in such investments and to provide an incentive for companies for faster deployment of new facilities. Second, the state should articulate a clear policy of wanting to achieve broad access to advanced services.

We recommend that the Minnesota Legislature:

- adopt a state telecommunications policy calling for the completion of an advanced technology, broadband telecommunications network throughout the state by the year 2005.
- convene an ad hoc, joint legislative commission which would develop a process for coordinating activities within state government, removing state obstacles to deployment of broadband networks, monitoring progress toward those goals, and sorting out the roles of different state agencies.
- instruct executive branch agencies how it wants them to achieve state telecommunications goals. The Legislature should also take steps to ensure long-term responsibility for and coordination of state telecommunications policy in the executive branch.

To implement legislative policies, state regulators in the Public Utilities Commission will need to facilitate investment in new telecommunications networks that help to meet state goals. Investment issues are particularly important because so many of the old electro-mechanical switches still used are in central offices operated by the four largest companies, and because these companies are likely to face new forms of marketplace competition.

We recommend that the Public Utilities Commission:

- evaluate proposals from rate-of-return regulated telephone companies to upgrade their facilities based on investment over a company's entire network and considering social as well as economic criteria.
- allow telephone companies opportunities to earn higher rates of return on those investments which carry a higher than normal risk, if necessary to open capital markets and to encourage telephone companies to invest in statewide advanced networks.
- adopt new standards for depreciation of major equipment items which would generally shorten useful lives by basing them on technological lifespan.
- establish standards for switching equipment and other facilities that would stimulate investments. Compliance with these standards would be a requirement to keep the franchise for a service area.
WORK OF THE COMMITTEE

CHARGE FROM THE BOARD

The committee worked in response to the following charge from the Citizens League Board of Directors:

Telecommunications Policy

For many years, there was only one player in the telecommunications industry. This no longer is true. Residents and businesses now have a variety of telecommunications options. New technology, court, and Federal Communications Commission interpretations of federal antitrust laws may render our regulatory approach to telecommunications obsolete. New players can circumvent old structures, and regulations may be constraining the major firm from competing in many of the same markets.

As a changing industry, telecommunications has the characteristic (low fixed costs for entering the business) which usually suggests a policy of deregulation, or at least a substantial change in the basis of regulation. However, this is true only if the telecommunications infrastructure is in place and up-to-date; and that may require substantial capital investment.

As we move to an information society, telecommunications policy will determine the nature and extent of individual and small business utilization of telecommunications.

The 1987 Minnesota Legislature divided telephone services into three categories and tied regulation to the degree of competition in the service area. The law also requires that Northwestern Bell (NWB) keep separate accounting systems for regulated and deregulated services. NWB proposes a return to one accounting system with protections for individuals and small businesses.

The committee should determine how state policy can protect the public interest, while at the same time acknowledge and capitalize on new realities in the telecommunications industry that may affect our economic prosperity. The committee then should determine whether changes in state telecommunications policy, including regulation and structure, are needed, given changing technology, future capital investments, and appropriate degrees of access.

The committee's examination should include:

• changes in and the status of the telecommunications industry;

• analysis, comparison, and the effect of telecommunications regulation in Minnesota and other states;

• alternative forms of telecommunications regulation;

• likely telecommunications capabilities as technology changes;
• the effect of state policy and investment in telecommunications infrastructure on the development of technology;

• the effect of changes in telecommunications policy on economic development;

• means of preserving access to basic services for individual consumers and small businesses; and

• possible state support in the development of new telecommunications technology through existing agencies, including the Greater Minnesota Corporation and the University of Minnesota.

COMMITTEE MEMBERSHIP

Under the leadership of Milda Hedblom, chair, and Mark Spurr, vice-chair, 27 Citizens League members participated actively in the deliberations of the committee.* They are:

William Batcher
Howard Bell
Bill Borgerding
Reed Carpenter
Harold Chucker
Janet Dieterich
Chris Donaldson
Edward Fagerlund
Robert Fuehr
Marvin Geisness
Gerrit Groen
John Hoeschler
C. Joseph Howard
Robert Johns
Stephen Kelley
Margaret Lulic
Elsie Martin
Susan McCloskey
Angus McDonald
Bonnie McLellan
Susan Myers
Ann Newhall
Michael Nowick
Valdemar Olson
Edwin Ross
Robert Teetshom
Victor Ward

* A special thanks to Robert Einsweiler for his helpful participation as a correspondent to the committee.

COMMITTEE MEETINGS/RESOURCE SPEAKERS

The committee met for the first time on November 9, 1988 and concluded its work on October 18, 1989. A total of 36 meetings were held. As a part of the study process, the committee heard from the following resource speakers:

Steve Alnes, former newspaper reporter, director of the Upper Midwest Council, consultant for Northwestern Bell for two years, and editor of the Minnesota Journal.

Joe Bast, manager of telecommunications, IBM's central area

Barbara Beerhalter, Chair, Public Utilities Commission

Mary Birmingham, director, Metronet

Augie Blegen, Executive Director, Minnesota Business Utilities User's Council

Michael Bradley, Assistant Attorney General

Tom Burney, U.S. WEST Communications, St. Paul Headquarters

Vern Chamberlain, U.S. WEST Communications, St. Paul Headquarters

Shelli Cielinski, U.S. WEST Communications, Special Needs Center

Bob de la Vega, Assistant Commissioner, Minnesota Department of Trade and Economic Development
Robert Einsweiler, committee correspondent and professor, Hubert H. Humphrey Institute of Public Affairs
Senator Gary DeCramer, DFL-Ghent
Ed Fagerlund, committee member, and Economist in the Telecommunications Unit of the Minnesota Department of Public Service
William Flynn, Attorney-at-Law, Lindquist and Vennum
Hal Freshley, Senior Planner for the Aging Program, Metropolitan Council
Robert Fuehr, committee member and Assistant Vice-President, US WEST Communications
Kathy Gaalswyck, Central Minnesota Initiative Fund, Little Falls
Neil Hamilton, professor, William Mitchell College of Law
James Jarvis, Assistant Commissioner, Department of Public Service
Pat Jennings, United Telephone Company
Pat Kovel-Jarboe, Telecommunications Development Center, University of Minnesota
Bill Lamson, Department of Human Services
Sue McCloskey, committee member, vice president, Faciliserv, Inc.
Michael Miller, Collins Communications System
Harold Nicholson, Manager, Computational Services Unit, Department of Public Service
Michael Nowick, committee member and Executive Secretary, Minnesota Telephone Association
Mark Oberlander, Telecommunications Supervisor, Public Utilities Commission
Robert Pepper, Office of Plans and Policy, Federal Communications Commission
Rick Rappe, president, Teletech Resources Corporation
Kurt Strom, Minnesota Council on Disability
Roger Sween, director, Office of Library Development and Services
Bob Traun, U.S. WEST Communications, St. Paul Headquarters
Ben Watson, United Telephone Company
Randy Young, Director of Telecommunications Policy Planning, State Planning Agency

Titles are as of the time that the speaker appeared before the committee.

The committee's work also included a trip to U.S. West Communications, Saint Paul Headquarters, and to Saint Cloud Technical Institute.

COMMITTEE STAFF

Allan Baumgarten prepared this report. Staff assistance for the committee's work was provided by Dawn Westerman, Meredith Poppele, and Joann Latulippe.
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School Shopper Help for Parents

THE SCHOOL BOOK: 1990-91
A Comprehensive Guide to Elementary Schools in the Twin Cities

Minnesota parents who are selecting schools now have a concise source of comparative information. *The School Book, A Comprehensive Guide to Elementary Schools in the Twin Cities*, a new publication from the Citizens League, is now available. The book profiles 449 public and private elementary schools in the metropolitan area.

The book features information about each school's curriculum, foreign languages, building and facilities, extracurricular activities, number of students and teachers, class size, use of technology, grading system, parent organizations and communications, and services such as latchkey and breakfast. Each school profile includes a self-description of the school's teaching philosophy and strengths.

*The School Book* also includes information about what to consider when choosing a school, an explanation of Minnesota's school choice law, an application for the open enrollment program, and a Metropolitan Council map of public schools and districts in the region.

You can get a copy of *The School Book* by calling the Citizens League at 612/338-0791 or by using the enclosed order form. League members can buy the book for $10.00; the nonmember price is $12.95.

Public Affairs Directory 1991-1992 Available This Summer


New report highlights Minnesota health care marketplace

*Minnesota Managed Care Review 1991*

A new report by the Citizens League provides valuable information about Minnesota's health coverage marketplace, including health maintenance organizations, preferred provider arrangements, and Blue Cross/Blue Shield. The report, *Minnesota Managed Care Review 1991*, also analyzes key trends in enrollment, self-insurance, and management arrangements and costs.

*Minnesota Managed Care Review 1989* is a valuable reference for people who need to keep up with Minnesota's dynamic health care marketplace. League members can buy the report for $10.00; nonmember price is $15.00. Discounts are available for multiple copy orders. To order your copy, please use the enclosed form or call the League at 612/338-0791.

*The data set developed by the League staff in preparing its analysis is also available. Call the League office for details.*

*Minnesota Managed Care Review 1991 will be published in May 1991.*
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WHAT THE CITIZENS LEAGUE IS

The Citizens League has been an active and effective public affairs research and education organization in the Twin Cities metropolitan area since 1952.

Volunteer research committees of League members study policy issues in depth and develop informational reports that propose specific workable solutions to public issues. Recommendations in these reports often become law.

Over the years, League reports have been a reliable source of information for governmental officials, community leaders, and citizens concerned with public policy issues of our area.

The League depends upon the support of individual members and contributions from businesses, foundations, and other organizations throughout the metropolitan area. For membership information, please call 612/338-0791.

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Join the Citizens League and help make things happen

IMPACT

Being a member of the Citizens League means you care about what happens in Minnesota and believe that good public policy depends upon an informed citizenry. League membership gives you an opportunity to participate in shaping public policy. Membership also offers these additional benefits:

PUBLICATIONS

• Minnesota Journal — 22 issues a year of timely public affairs news, analysis and commentary, including the League’s annual property tax survey.

• Public Affairs Directory — a handy listing of agencies, organizations and officials involved in making public policy.

• The School Book — a comprehensive guide to elementary schools in the Twin Cities.

• Citizens League reports — full reports and statements on topics studied — available upon request.

MEETINGS

• Mind-Opener breakfast meetings — every Tuesday from Labor Day to Memorial Day. Public officials, community and business leaders meet with League audiences to discuss and debate timely issues.

• The DeSantis Series: Neighborhood Issues in Focus — Speakers explore issues of neighborhood economic development.

• Seminars -- occasional, in-depth discussion of issues.