

Getting Online: a guide to the Internet for small town leaders

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Introduction

A startling fact is that less than ten years ago – even five years ago – the Internet was a fringe tool employed by university researchers, computer geeks and selected government officials. Business owners ignored it, political candidates overlooked it, and most people considered it a fad. Today, the Internet has captured the attention of just about everyone: school children and senior citizens; small town entrepreneurs and corporate executives; technology virtuosos and computer novices.

Among the 171 million Internet users are local government officials and community leaders. *Getting on Line: a guide to the Internet for small town leaders* is geared to this audience, including beginners and Internet masters. The guidebook explains, in plain English, the power, organization and tools of the Internet. It demonstrates how local government's use of the Internet can make a major contribution to public information and customer service.

Getting Online begins by describing the Internet, its many uses, and computer hardware and software requirements. It's the best place to start if you have not yet selected an Internet Service Provider (ISP), or are unhappy with your current ISP. Chapter 2 continues with an exploration of the World Wide Web, including Web lingo, effective search strategies, browser tools, and guidance about Web credibility and privacy.

Chapter 3 is a how-to guide for putting local government online. It steers you through the process of Web site development, domain registration and marketing, and offers recommendations for the site's contents. The chapter ends with case studies of well executed local government Web sites.

Encouraging public access and use is the theme of Chapter 4. While more Americans are connected to the Internet than ever before, a persistent digital divide exists between the information rich and the information poor. Among the "have nots" are the citizens of small towns and rural areas, especially those with lower incomes and education levels. The chapter discusses how to help close the divide by promoting public access to computers and the Internet at local schools, libraries and other public places. It also offers guidance on used computer equipment and electronic commerce, and showcases public-access case studies from small communities.

Chapter 5 is directed to the many small and rural communities that lack speedy, affordable access to the Internet. Without high-speed, broadband telecommunications, small communities cannot compete in creating, retaining and attracting sources of economic development. The chapter explains how to be pro-active in attracting telecommunications investments by crafting a strategic plan. Successful strategic planning focuses on evaluating the local market, community leadership, existing opportunities, and potential technology applications. The chapter concludes with case studies of small community achievements in attracting high-speed telecommunications services.

More than 60 Web sites of interest are catalogued in Chapter 6. The list includes sites of government agencies, information clearinghouses, non-profit organizations and associations, and sites of general interest. Following the final chapter is an appendix containing a Glossary of Terms.

The National Center for Small Communities (NCSC) welcomes your comments on *Getting Online*. We are particularly interested in hearing if and how the guidebook is useful to your community. Your questions and ideas could tailor a future publication, in print or on the NCSC Web site. Please e-mail your comments to ncsc@sso.org and visit the NCSC Web site at <http://www.natat.org/ncsc>. The site has information about NCSC membership, publications, annual conference, awards programs, and more.

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Getting on the Internet

What is the Internet?

The Internet is quite simply the largest computer network in the world. Think of it as a giant transportation system for information—the Information Superhighway. A group of computers linked together for the purpose of sharing information creates a "network." The Internet is a "network of networks" because it connects together many different computers and networks, stretched around the globe.

This worldwide communications system allows users to send messages and share files thousands of miles away, within mere seconds. Chatting with a community leader in remote, rural Australia is as easy as messaging the person next door.

The Internet began in the 1960s as a computer network linking the Defense Department with several research universities. The goal was to establish a system of networks that would facilitate communication in the event of a nuclear disaster. The National Science Foundation (NSF) also played a central role in Internet history by setting up NSFnet in the mid-1980s. NSFnet linked together many major universities interested in sharing computing resources and information within a restricted community of educators and researchers.

In the early 1990s, the NSF lifted its ban on commercial use and opened the door to potential Internet users worldwide. Quickly, Internet growth expanded beyond governments and universities, as businesses and individuals searched for their place in cyberspace.

Who Uses the Internet—and Why?

According to the U.S. Department of Commerce, 171 million people around the world now use the Internet, an exponential increase from just 3 million people in 1994. Most Internet users are located in industrialized countries, including approximately 90 million in the United States and Canada.

According to *Falling Through the Net*, the July 1999 report of the U.S. Department of Commerce, National Telecommunications and Information Administration (NTIA), 42.1 percent of American households now own a computer—a considerable increase from 24.1 percent in 1994 and 36.6 percent in 1997. Just over 26 percent of U.S. households are now online, up from 18.6 percent in 1997. Studies by Forrester Research, a Cambridge, Massachusetts-based marketing research firm, show that more than half a million households are coming online every month—that's a staggering 18,000 new homes every day.

Some analysts predict that by November 2000, when voters head to the polls, half of all U.S. households will have access to the Internet. Candidates already are considering ways to harness this tremendous electronic potential.

People employ the Internet for an ever-expanding variety of purposes: everything from e-mailing a friend, to researching the most advanced medical treatment for a rare disease. (According to the research firm Cyber Dialogue, 22.3 million adults, or nearly 40 percent of American adults online, used the Internet to seek health-related information in 1998.) Anyone with a decent Internet connection easily can download software to play music, without spending a dime or visiting the local record shop. Late-breaking news, stock quotes, sports scores and travel planning are among the hundreds of other popular Internet uses. A recent survey reported that, for active users, the Internet is a growing source for news. For such people, Internet use has surpassed time spent with magazines and is just about equal to newspapers.

The most typical Internet surfer is a highly educated male in his mid-30s, with at least a middle-class income. But the demographics are quickly shifting. According to the Georgia Tech Research Corporation, women are the fastest-growing component of Internet users. By 2000, it is expected that 33 percent of Internet users will be women. *Falling Through the Net*, the NTIA report, shows that online participation among men and women is already nearly equal: 34.3 percent of men use the Internet, compared to 31.4 percent of women.

The fastest-growing group of Internet adopters is people over 55, says Jeff Bezos, CEO of online bookseller Amazon.com. They weren't the first to get online, he maintains, but they have sufficient resources to purchase computers. Also, many people over 55 have a child or grandchild who helps them along.

Businesses increasingly rely on the Internet for global marketing and sales. Electronic commerce and Internet advertising tripled during the past year and has become considerably more sophisticated. (See Chapter 4 for more information on electronic commerce.) Popular electronic retailers, such as Amazon.com, are using comparison-shopping technology to analyze customer's tastes and offer products particularly suited to an individual buyer. Technology futurist Glenn Hiemstra sees a dramatic expansion in electronic commerce over the next decade. By 2009, Hiemstra projects, all business-to-business transactions and as many as a quarter of all retail transactions will occur over the Internet.

According to the U.S. Department of Agriculture, more than one-third of farmers use computers and more than 13 percent have access to the Internet. The TVA Rural Studies' *Farmer's Guide to the Internet* explains that farmers use e-mail to communicate with extension agents, family friends and other farmers. Farmers also jump online to track commodities prices, get weather information or reports from university extension services and visit agricultural companies' Web sites where product information is available 24 hours a day.

Smart Devices, Easy Access

Internet technology and advanced computing are promising to soon transform everyday appliances and office equipment into user-friendly "smart devices." Engineers are developing designs for air conditioners that turn themselves on in response to an e-mail message from the office and vending machines that call out over the Internet for a refill of candy. A Salt Lake City start-up company has developed the prototype for an Internet-savvy lawn-sprinkler system that queries the National Weather Service to determine the likelihood of rain before turning itself on. Intelligent transportation systems (ITS) promise exciting in-vehicle applications in the areas of tourism development and emergency preparedness, even for the smallest of communities.

But according to *Wall Street Journal* technology columnist Walter Mossberg, the Internet is not yet a mass medium. For the Internet to gain the worldwide popularity of televisions, a few things must change. In addition to making home connections speedier, cheaper and automatic, Mossberg sees the need to replace the personal computer as the Internet's device of access. In place of PCs, he favors simple, inexpensive information appliances designed to access the Web and e-mail and to perform a few limited tasks.

Judging from the computer industry's vast Comdex trade show, held each fall in Las Vegas, information appliances are the industry's hottest new item. For \$400 or less, a variety of electronic appliances can now deliver e-mail and Internet access to TVs, telephones and other home-based devices. One of the newest gadgets is the Web-pad, a battery-powered, wireless computer about the size of an Etch-a-Sketch toy that uses radio waves to browse the Web, send and receive e-mail, and perform other Internet tasks. The Web-pad works its high-tech magic through a radio-frequency link with a personal computer stationed 300 to 500 feet away in the home or office.

The previously disparate world of telephones, television and computers is quickly blending. Soon, new information appliances will have characteristics of all three devices. For example, Motorola recently announced plans to equip every cellular telephone it makes next year with an Internet browser.

According to IDC, a research firm in Mountain View, CA, the market for information appliances soon will explode from \$485 million in the United States today to \$4.2 billion in 2002, at which point information appliances will exceed the demand for home PCs. For simple tasks, such as sending an e-mail or accessing the Web, such appliances may become the device of choice.

Yet the Web-pad, along with several other information appliances, are useful only if the host computer has a constant, high-speed, broadband connection to the Internet. Fast, always-on connections are those offered by cable companies (cable modems) and phone companies (DSL, or digital subscriber lines). Since dial-up modems using conventional, slower phone lines are currently employed by 90 percent of all Internet users, there is a long way to go before

information appliances are an everyday item. Most technology experts predict three to five years before broadband, high-speed connections are available nationwide.

Alternatively, the cost and complexity of personal computers may decline so sharply that PCs become accessible to nearly everyone. Some futurists predict that the sophisticated personal computer of 2008 will cost less than \$300 and pack 64 times the power of today's machines. According to Moore's Law, named after former Intel Corporation Chairman Gordon Moore, such numbers are believable. Moore's Law holds that computer power doubles every 18 months for the same price.

The industry may soon exceed Moore's Law. Researchers from Hewlett-Packard and the University of California at Los Angeles are experimenting with simple computing components no thicker than a single molecule. Their molecular-scale sensors could produce computers that are 100 billion times as fast as today's most powerful PCs. The computer's future appears limitless.

The Internet and You

Although the Internet's functions are almost boundless, there are eight Internet tools in wide use. *Getting Online* concentrates on the World Wide Web (WWW), but a quick glance through the following list confirms that the Web is just one part of a sophisticated telecommunications network.

Chat rooms: Live electronic conversations on a particular topic, in which a group of users "chat" online, via typing on their keyboards. Users must be in the chat room in order to participate in the conversation, and passwords are usually required.

Electronic mail (e-mail): A tool that permits users to communicate messages electronically with anyone connected to the Internet. Messages can be sent to a single individual or to a group. Word-processing documents, spreadsheets, database information or graphics programs often can be e-mailed as attachments. There are many different e-mail packages, each with its own features. Most users get their e-mail package from their Internet Service Provider (ISP). (See *The Dos and Don'ts of E-mail*.)

File Transfer Protocol (FTP): A tool used to copy files from one computer to another. FTP is often used to download free software from the Internet. If an Internet address begins with ftp://, it is a file to be transmitted in File Transfer Protocol.

Gopher: Gopher sites are menu-based Internet information libraries that preceded the World Wide Web. They begin with the Internet address "gopher://."

Mailing lists or Listservs: A service to which people subscribe, usually at no cost, to

automatically receive information on a particular topic of interest. Messages posted to the list are automatically distributed via e-mail to all subscribers to the list.

Newsgroups or Usenet: An electronic bulletin board or discussion group where interested users post messages on a particular topic. Users receive the messages by logging on to the Newsgroup or Usenet site. By participating in mailing lists/listservs or newsgroups, people who share a common interest can engage in discussion, debate or focused problem solving. Since 1979, Usenet has been an electronic conduit for sharing news and views of world events and scientific research.

Video conferencing: An increasingly popular technology that transmits full-motion video images between two or more sites. Video conferencing is used for distance learning, telemedicine, employee training, public forums and business conferencing. The video signal can be either one way (from one site to many sites) or two way (simultaneous video broadcast between two or more sites).

World Wide Web (WWW): The ever-expanding, graphics-based, "point-and-click" system for finding and retrieving information on the Internet. With the help of an Internet browser, Web surfers can access documents that include text, graphics, video and audio.

Internet Hardware and Software Requirements

Although the terminology can be overwhelming, connecting to the Internet is really quite simple. To make the link you need five things:

A computer: Preferably a high-end machine such as a 486 PC or Power Mac, or greater. Although a 386 PC can do the job, higher-end machines download on-screen graphics far more quickly. The most realistic choice for low-end hardware is the equivalent of a 486 PC with 8 megabytes (MB) of memory (RAM) and 200 MB of computer disk space. A reasonable low-end Mac is the 68030 microprocessor with 16 MB of RAM. The more RAM you have, the faster the machine will perform when using the Internet.

A modem: The device that links the computer's digital world and the phone line's analog audio world. A modem converts single binary digits (bits) into analog signals (sound waves) that can be transmitted over phone lines. The translation permits users to "dial in" to the Internet using a conventional phone line. Modems can be internal (a board that resides in the computer) or external (a box that connect to the computer's serial port). Either way, a phone cord is needed to connect the modem to a phone jack.

Modem speeds are measured in kilobits per second (kbps). Common speeds are 14.4, 28.8, 33.6 and 56.6 kbps. The modem is key to surfing the Internet at a fast speed, so a 28.8 kbps or greater modem is recommended. Most new computers come with 56 kbps modems installed.

These fast versions run no faster than 33.6 kbps "upstream" to an ISP, but about 40 to 50 kbps "downstream," from the ISP to the computer.

A path to the Internet: "Plain Old Telephone Service" (POTS) is a satisfactory means of connection for most users, but others may want a faster path. A separate phone line is not required. The speedier, far more costly paths include ISDN, ADSL, cable modem, T-1 line and wireless service. Availability of some of these technologies is still limited to major metropolitan areas, but smaller communities are making progress. (See *Fast Pathways to Cyberspace*.)

An Internet account: An Internet account can be with a commercial online service (such as America Online), a local or regional ISP or a community network offering Internet service at a discount. (See Page 10 for guidance on choosing an Internet provider.)

Browser software: A software program that runs on a computer and renders incoming messages into graphics form on the screen. The most popular browsers are Microsoft's Internet Explorer and Netscape's Navigator (earlier version) or Communicator (most current version). Most Internet accounts come with browser software, so it is not necessary to purchase the software separately.

The WebTV Alternative

It is also possible to access the Internet using a television-based information appliance, such as WebTV (<http://www.webtv.net>), a box that hooks up to the TV and resembles a video game. Because it uses the TV screen and has a built-in modem and software program, the configuration is quite simple. The device sells for \$160 to \$300, depending upon model and keyboard, and requires a monthly service charge of \$19.95. In some rural areas, it is necessary to make a long-distance call to connect to the service. In these situations, WebTV advises users to get Internet access through a local ISP, and it discounts the monthly service charge to \$9.95.

The downside of WebTV is that it does just one thing. With the cost of PCs dropping, many users prefer to invest \$300 in a multi-task machine. But if you plan to do little more with your computer than surf the Net, a TV-based information appliance may be adequate.

Arranging an Internet Account

An Internet account can be with a commercial online service, a local or regional Internet Service Provider (ISP), or a community network that offers Internet service at a discount. Not all options exist in all service areas, and there are advantages and disadvantages to each.

Community networks are dedicated to making the Internet accessible to all citizens. Such networks bring local citizens together to explore their community's needs, learn about Internet

technology and develop projects to better serve citizens typically disassociated from community decision making. Most community networks offer public-access sites in local libraries, schools, selected businesses and nonprofit organizations. In addition, they make free or low-cost Internet access accounts available to low-income individuals.

According to the Association for Community Networking (ACFN), networks exist in many forms and go by different names, including Free-Nets, InfoZones, bulletin board systems, Tele-villages and smart cities. AFCN (<http://bcn.boulder.co.us/afcn>) is an educational, nonprofit organization dedicated to fostering and supporting community networking. The association hopes to advance the grassroots movement beyond the approximately 150 community networks now in operation. Check with local librarians or citizen action groups on the existence of local networks.

Most Internet users set up an account with a commercial online service or a local ISP. The scope of the choice is formidable, with 4,500 Internet services available across the country. Among the most popular national ISPs are America Online (AOL), Microsoft Network (MSN), AT&T Worldnet, CompuServ, Prodigy, Earthlink and Mindspring.

To determine which options exist locally, check the telephone directory under the heading "Internet" and ask around. Consult with experienced Internet users at local schools, libraries and computer stores, and ask friends and colleagues. The Internet itself can provide a listing of local ISPs. Type "thelist.internet.com" in the browser window to be connected with a directory of ISPs organized by area code.

Boardwatch Magazine's Web site (<http://boardwatch.internet.com>) also includes an ISP locator service. Twice a year, Boardwatch also publishes a print directory listing more than 4,000 ISPs across the United States in more than 16,000 listings by area code. Another resource is Dr. Dawn McGatney's *Compleat Guide to an ISP You'll Enjoy* (<http://dogwolf.seagull.net/isp.html>).

How to Choose an Internet Provider

In large cities, Internet users make a selection from a host of fast and easy national and local providers. Rural and small communities are lucky to have more than two options. How to choose which one is best?

What does it cost? Usually the first consideration in selecting an Internet (IT) provider is price. In addition to a monthly fee of \$15 to 20, some providers still require a long distance call to connect to their service. Although the practice of long distance charges is disappearing in many rural areas, residents of some remote communities must still place a toll call to connect to the Internet. Users can avoid this expensive arrangement by having a local number to dial into their account, even if they are visiting areas away from home.

Another price consideration is the amount of time you expect to spend online. Most providers offer unlimited service for a set fee. But an affordable monthly allotment, if available, may be preferable if you expect to spend a limited amount of time online.

How fast and available? Speed is a major issue in selecting a service. Regardless of the type of modem used, the Internet provider's connection to the Internet should be T-1 line or greater. Another factor is the ratio of phone lines to customers. The number of lines per user should be sufficient to avoid a busy signal during peak hours. Make an evaluation by repeatedly calling the provider's modem number on weekdays between 7 and 10 p.m. and awaiting a modem tone. Encountering a busy signal with any frequency means that the provider has too few lines. Unless the company is in the process of upgrading its capacity, it is best to choose another provider.

All software included? Most service providers supply a complete package of Internet communications and applications software that is easy to install and use. The company should furnish a browser package (either Internet Explorer or Netscape) along with an installation and set-up program that automates the IT connection process. When comparing providers, ask for clear set-up instructions and make sure that the software offered is compatible with your computer's operating system.

Help! Technical support can be another deciding factor. The strongest providers have a 24-hour help line for immediate response to voice and e-mail queries. Some companies have technicians who specialize in particular types of computers, which may be an important issue for Macintosh owners.

Web site hosting offered? Web site hosting has become a popular IT customer service. If your city or town does not yet have a Web site, consider selecting a provider who will help design a site and provide space for it on the company's server. Alternatively, communities can join the National Center for Small Communities (NCSC) and receive Web site hosting as a member service. NCSC membership entitles a community to a free, one-page general information Web site linked from the NCSC home page. For more information about this service, visit the NCSC home page at <http://www.natat.org/ncsc>.

E-mail accessible from anywhere? A significant consideration for many users is ease of e-mail access. The large national service providers supply e-mail accounts that are accessible from anywhere. Global access is an essential benefit for travelers and others who regularly conduct business from more than one location (e.g., office and home). Most local and regional ISPs and community networks cannot provide ubiquitous service.

Because e-mail access is often limited, some users set up a separate e-mail account with one of several free, Web-based, e-mail services, such as Hotmail, Juno and Rocketmail. Web-based e-mail is accessible worldwide, from any type of computer, and does not require any

new software other than a Web browser. The service is free because it is advertiser supported. For users for whom e-mail is the main, or even the only, reason to go online, a free Web-based e-mail service is a perfect solution. (To learn more about these services, visit their Web sites at hotmail.com, junos.com and rocketmail.com.)

How much direction is needed? Finally, there are several tradeoffs between large, commercial online companies and smaller, local ISPs. Among the most well-known national service providers are America Online (AOL), Microsoft Network (MSN), Prodigy and CompuServe. These large, online companies operate their own computer networks with elaborate content areas that include chat rooms, bulletin boards and other graphically organized materials. Services with well-organized content areas are an attractive option for computer novices because they have simple menus and other helpful navigational aids. Some users spend so much time surfing within AOL or MSN that they rarely cross into the real Internet!

The national providers compete with thousands of local and regional ISPs that provide clean, simple gateways to the Internet. These ISPs may offer a faster link to the Internet for a lower price, along with better customer service. But their home pages lack the organized content that some users have come to expect.

Research before deciding! The best advice is to completely check out an IT service provider before signing on the dotted line. Some online companies offer a one-month free trial period to new users. Switching between providers can be expensive and troublesome, especially if the provider hosts your e-mail account. E-mail addresses are not portable, and Internet providers are under no obligation to forward your mail to a new address. So if you sign on with MSN and then switch to a local ISP, e-mail sent to an MSN e-mail account will not get to you. Notifying friends and business associates of your new e-mail address is a horror. This is why people often scribble e-mail addresses on their business cards!

Exploring the Internet at Schools and Libraries

Despite the proliferation of computers, not everyone is able to purchase a system or enjoy IT access at work. Luckily, thousands of schools and libraries, including many in the smallest and most remote communities, are crossing the digital divide. Schools and especially libraries are quickly becoming public access sites where citizens can explore the Internet at no cost or for a very reasonable fee.

Thanks to the Telecommunications Act of 1996, schools and libraries are eligible for discounts ranging from 20 to 90 percent on telecommunications and related services. The Universal Service Fund, popularly known as the "E-rate," is administered by the Schools and Libraries Division (SLD) of the Universal Service Administrative Company (USAC), a private, not-for-profit organization. Schools and libraries qualify for the fund according to their level of economic disadvantage and their location, rural or urban

Community leaders can help bring telecommunications access to towns or cities by establishing a public-access site at a local school, library or community center. (See Chapter 4 for more detailed information on E-rate discounts and guidance on how to establish a local community access center.)

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Exploring the Web

What is the Web?

The World Wide Web (WWW) is a sophisticated linking system for finding and accessing Internet resources. The Web provides an easy passage to hundreds of thousands of print and hypermedia documents stored on computers all over the world. As explained by Valerie Quercia, author of *Internet in a Nutshell*, the Web is a cross between a research library and an entertainment channel, letting users access (and publish) multimedia documents containing text, sound, images, video and more.

What makes the Web exciting and unique is its nonlinear, graphical format. While parts of the Internet are text-based, the Web employs a graphical interface (browser) that allows users to surf the Web by simply pointing and clicking on graphics and hyperlinked text, rather than typing in computer commands. In this way, navigating the Web is as elementary as opening documents using a Windows or Mac program.

How the Web Was Woven

The Web's origins date back to the 1980s, when British computer scientist Tim Berners-Lee was working at a physics lab in Switzerland. It frustrated Berners-Lee that his computerized daily schedule planner, rolodex and documents were each housed in separate databases. To remedy the problem, Berners-Lee designed a program for his personal use that linked databases allowing quick and fluid movement among them. But it wasn't until 1991 that Berners-Lee had support from his superiors to develop the idea into what he called the "World Wide Web," a program that could link databases around the world.

Berners-Lee's Web, based on text and typed commands, was not yet a graphical system, however. That soon changed when the scientist invited researchers in other institutions to link up to his lab and download the basic software needed to create Web documents. Marc Andreessen, a young graduate student at the University of Illinois, downloaded the free software and led a small group of students in transforming Berners-Lee's software into a program called Mosaic. This revolutionary program could run on a user's computer and metamorphose the text-based Web into a graphical wonderland. Users could now surf the Web by simply pointing and clicking on words and symbols. Soon after, the legendary Andreessen co-founded Netscape Communications Corporation.

What the Web Has to Offer

"Some local officials view the Web as a 'toy for staff' and don't realize that the tool is becoming

essential for people to do their jobs," says Kathleen McMahon, a Montana-based telecommunications planning consultant. There is an ever-growing amount of pertinent local government-related information that can be easily accessed and downloaded from thousands of Web sites: federal and state government agencies; state township and municipal associations; state rural development councils; national and statewide economic development organizations; university research centers; and product vendors.

The Pennsylvania State Association of Township Supervisors (PSATS) recently chronicled some of the ways in which township officials use the Web to accomplish daily tasks. Its list included searching for a missing part for the township's Austin Western paver; comparing and contrasting 189 different insurance vendors; gathering economic data grant applications; researching the status of pending legislation; accessing particular township data; and getting advice from peers by participating in the PSATS E-mail Discussion Group. The PSATS Web site (<http://www.psats.org>) furnishes helpful links to state agencies and commissions, legislative bodies, data centers, non-profit organizations, and other local governments.

It is invaluable that local government officials can refer citizens to state government Web sites that provide extensive information and services. Pennsylvania citizens benefit from the Commonwealth's Web site (<http://www.state.pa.us>), which received Government Technology magazine's "Best of the Web 1998" award. In addition to the typical static information, the site offers downloadable forms for income, property and corporate taxes; auto licensing, titling and registration; fishing licenses; and voter registration. Residents also can access extensive school profiles, county-by-county listings of where to register and launch boats; and, on-line job listings. Best of all, these services are available 24 hours a day, seven days a week.

Government Technology applauded Pennsylvania and other states for their advancements in electronic commerce. Award winners showcased sophisticated sites that offer true electronic transactions, as well as features like audio and video. It is assumed that government Web sites offer static information, but these more innovative sites are also providing virtual online government features and comprehensive links to related information.

Many state rural development councils offer complex Web sites that put hundreds of useful resources at the hands of community leaders. For example, an electronic directory containing more than 800 resources for communities, businesses and individuals is available on the South Carolina Rural Development Council's (SCRDC) Web site (<http://www.state.sc.us/scrdc>).

The SCRDC's electronic directory offers information on grants, loans and technical assistance from federal and state agencies, as well as nonprofit and private sources. Through its comprehensive links, users can perform numerous tasks, such as researching private foundations, determining the status of pending legislation; conducting market research on a company considering a relocation to the area, and much more. The possibilities are endless.

Getting Started

Web surfers need a Web browser, such as Microsoft's Internet Explorer or Netscape's Communicator (latest version) or Navigator (earlier version). Most Internet accounts come with browser software, so it is not necessary to purchase the program separately. This is generally true whether accounts are with a commercial online service or an Internet Service Provider (ISP). But it's a good idea to call the Internet service to confirm that a browser is included or to find out what brand and version of software is recommended, should it not be furnished free of charge.

The best arrangement is to obtain the most current version of the browser on CD-ROM, which will download far more quickly than software stored on a floppy disk. Current versions of both Internet Explorer and Netscape can also be downloaded from the Web at no charge, but the process can be slow. Go to <http://www.microsoft.com> for Internet Explorer and <http://www.netscape.com> for Netscape. Current users of Internet Explorer and Netscape can update their versions by clicking on the browser's icon located in the upper right corner.

Web Words 101

What gives the Web its point-and-click capacity is a programming language called HyperText Markup Language, or HTML. HTML is special text embedded with a series of formatting commands. When interpreted by Web browsers, such as Internet Explorer or Netscape, the commands make a document appear like professional print.

Web pages written in HTML contain highlighted words that are linked to other Web pages. These hypertext links are easy to detect because they appear in a different color from the rest of the text or are underlined. One click on a highlighted hypertext link activates the browser and carries the user to a new Web page. Since these operations occur behind the scene, users do not need to know anything about programming language to browse the Web.

Addresses on the Web are called URLs, or Uniform Resource Locators. URLs follow a formula and usually look something like <http://www.natat.org>, which is the URL for the shared Web site of the National Association of Towns and Townships (NATaT) and the National Center for Small Communities (NCSC). The URL is made up of several components, each followed by a dot. (What looks like a period in text is called a "dot" in Internet lingo.)

The first part of the URL is the protocol that identifies how the information will be conveyed over the Internet. Since most Web pages are written in HTML, the protocol is generally HyperText Transmission Protocol, or http. You will see "http://" at the beginning of most Web addresses. URLs also may begin with other protocols, such as ftp:// (File Transfer Protocol); news:// (newsgroups); and gopher:// (gopher sites).

The second part of the URL explains where the Web page resides. Since the NATaT/NCSC site resides on the World Wide Web, its URL includes the signature "www." Some URLs direct the user to sites on the Web, but do not begin with "www." An example is <http://fdncenter.org>, the Foundation Center's site, where users can research foundation funding and learn how to write effective grant proposals.

The third and most familiar part of the URL is the domain name comprised of two components. The first component is the unique name or abbreviation of the organization, agency, business or individual that owns the site, such as [natat](http://natat.org) for the National Association of Towns and Townships. The second component is a three-letter code that identifies the type of organization that is supplying the Internet connection. The most common codes are:

.com businesses

.gov government agencies

.org organizations (non-profits and service groups)

.edu schools and research institutions

.net major Internet access providers

The URLs of many state and local government Web sites follow a different protocol. Instead of ending in a three-letter code, they end in "us," the two-letter country abbreviation for the United States. They also contain other codes that provide the user with information about the server's geographic location. This alternative standard, widely used internationally and gaining acceptance in the United States, is known as the country naming standard. The result is a URL that looks something like this: <http://www.twp.grand-rapids.mi.us> (for Grand Rapids Township, Michigan) or <http://www.ci.norfolk.ne.us> (for city of Norfolk, Nebraska). (For additional details on the country naming standard, see page 27.)

Finding Information on the Web

The Web has often been described as an immense library, with all the books scattered on the floor. Since it is growing by an estimated 1.5 million pages a day, figuring a way to quickly and easily navigate among the piles of information is a critical issue.

There are three principle avenues for finding information of the Web, and most people use all three! Which avenue you choose depends upon where you are on the Web at that particular time, and how detailed your directions are for finding a particular site.

The easiest and most straight forward way of locating a specific site on the Web is to know the

Internet address, or URL, and simply type it into the "Go To" box on the browser window. Most browsers will add the beginning "http://" automatically, so you only need to type in the remainder of the Web address and then press enter (or return).

For example, type <http://www.tml.org> into the box, press enter, and you will immediately go to the Web site of the Texas Municipal Association. Jump to a new site by typing in the URL no matter where you are on the Web: at the home page of a browser, ISP or search, or on any other Web site.

The user can tell that the browser is doing its job by watching the Microsoft icon (for Internet Explorer) or the N icon (for Netscape). If the search is progressing, a revolving Microsoft icon (in Explorer) or a meteor shower (in Netscape) will be visible in the upper-right corner of the window. Monitor how long it will take to download the page by keeping an eye on the display at the bottom left corner of the browser window. Depending upon the speed of the modem and the size of the page, it may take seconds or minutes to completely download.

Typing in Web addresses isn't as simple as it sounds. Most URLs are case sensitive, which means that capital letters must always be capitalized and lower-case letters must always be lower-case. Also, do not accidentally substitute the number "1" for the letter "l," or the zero ("0") for the capital letter "O." Mistyping just one small character can cause a host of problems and probably deliver an annoying error message.

When entering a long URL, such as <http://www.capecod.net/Wixon/evalhigh>, you may get a message that the site cannot be found. Assuming that you have not mistyped the address, it is likely that the page no longer exists or has been moved. If this happens, try backing up, by removing portions of the URL from right to left. For example, you might try <http://www.capecod.net/Wixon> or even <http://www.capecod.net>. Then use the site's headings, buttons or search tool to find the specific information you are looking for.

The second avenue for locating sites on the Web is to simply click on a hypertext link. All Web sites have dozen or even hundreds of useful links. As explained earlier, these links are easy to detect because they appear in a different color from the rest of the text or are underlined. One click on a highlighted hypertext link activates the browser and carries you to a new Web page. For example, visit the National Center for Small Communities home page at <http://www.natat.org/ncsc> and click on one of several hypertext links. These links provide transportation to additional NCSC pages, offering membership and publication information, details on NCSC's annual educational conference, and more.

The third way for uncovering information on the Web is to take an educated guess based on the name and three-digit code of the organization, agency or company you are searching for. For example, it comes as no surprise that <http://www.epa.gov> is the URL for the U.S. Environmental Protection Agency or that <http://www.aolfoundation.org> is the URL for the AOL Foundation. Of course, guessing the address of the site sponsor doesn't always work because URLs do not

necessarily conform to a standardized abbreviation format.

Firing Up the Search Engines

The fourth and most common strategy for finding information on the Web is to use a search engine such as Yahoo or Excite. (Technically, Yahoo is a Web directory, not a search engine, as explained below.) There are approximately 1,600 search engines in use today, and they are becoming increasingly sophisticated. Many search engine sites now offer free e-mail that is supported through Web-based advertising.

Search engines are databases that store Web pages. Using special automated software, a search engine hunts links across the Web, gathering pages wherever it can find them. Once a page has been identified, the search engine automatically indexes some or all of the words on that page. Then, when you key in words to search, the search engine checks for those words in its index and supplies the appropriate Internet addresses (URL). Although the search engine appears to be conducting a "real time" search for all pages posted to the Web, it is actually searching a finite number of Web pages that it has already gathered and indexed.

Search engines fall into one of two categories. The first category is "robot" searches, such as Excite and AltaVista, that use "crawlers" or "spiders" to scour Web pages and record the text they find. Most robot searches rate sites based on how often a keyword appears, listing the pages with most keywords first. But some new robot search engines use surfers' own browsing habits to compile lists of top sites on any given subject. An example is Google (<http://www.google.com>), which examines how highly regarded a Web page is by other Web authors. Goggle counts the number of other Web pages that include hyperlinks to that page and puts the most-linked-to sites at the top of the list.

The second category of search engines is Web directories, such as Yahoo, which use taxonomists—human researchers who sift through sites and organize them into elaborate lists of categories and subcategories. Yahoo's experts can make finer distinctions than a software program can, but they have difficulty keeping up with the sheer quantity of pages on the Web.

Many Web novices find that search engines generate unreliable and confusing results. The outcomes are often overwhelming, listing hundreds of possible Web sites when the user is looking for a specific one. It is possible to avoid unproductive searches by following this advice:

Be precise when choosing the words upon which the search is based. Include more than one word and preferably more than two. Overly broad searches call up thousands of entries with little likelihood that the information needed is anywhere near the top. The Web pages identified first, or on top, are those with the highest relevancy rankings. In other words, the search engine's first 10 suggested Web sites should fit your request more than the next 20 sites.

Stipulate your query by searching for words as a phrase and enclosing them in quotation marks. For example, "Kellogg Foundation" instructs the search engine to find pages containing these words together, as a phrase.

Don't limit yourself to a single search engine. A recent study by two scientists for the NEC Research Institute, published in the journal *Nature*, concluded that search engines cannot keep up with the exponential number of Web pages. Researchers Steve Lawrence and C. Lee Giles spent six months determining how many Web pages exist, and how many are actually picked up by popular search engines. Of the 11 popular search engines studied, they found that not one search engine indexed more than 16 percent of the Web, and most covered far less. Northern Light had the largest coverage at 16 percent, while Lycos and Euroseek hovered at just less than 3 percent.

Metasearch engines are a device for employing multiple search devices. Metasearches use a variety of search engines to find information on the Web. Visit sites such as Dogpile, Metacrawler and Metasearch to see which engines they utilize. But don't be fooled into thinking that one metasearch will guarantee results. It is still advisable to try several search sites because the content and method of indexing varies considerably among search engines. Conducting the same search using several different engines will uncover many more pages.

Focus your search by using Boolean operators such as AND, OR and NOT, which should be typed in capital letters. Most search engines allow you to use Boolean operators to expand or narrow a search. This is particularly valuable if you get too many hits and need to refine a search further, or if you get too few hits and need to widen your search.

- AND: Narrows the search by stipulating that both words must be contained. For example, Kellogg AND Foundation finds pages containing words about the Kellogg Foundation specifically. The AND joins the words together, just as quotation marks group the words as a phrase.
- OR: Widens the search by including either of the stipulated terms. Kellogg OR Foundation finds pages containing words about the Kellogg Foundation, Kellogg Company and all other Kellogg references, along with numerous others containing the word "foundation." This would not be a very productive search.
- NOT: Narrows your search by excluding the term stipulated. Kellogg NOT Foundation finds pages containing words about Kellogg, but excluding the words "Kellogg Foundation."

Specify upper and lower case words. Initial capitals often can force a case-sensitive match. Lower case usually locates all variations of words. For example, "Bill Gates" should find references to Microsoft's founder, while "bill gates" may produce pages about legislative "bills" or metal "gates."

Save the site URLs visited by using the "Bookmark" (Netscape) or "Favorites" (Internet Explorer) feature, explained on Page 20.

Don't expect too much from your search engines. With millions of pages added to the Web each year, quick and effective searches are far from guaranteed. Although search engine technology is likely to improve with time, it is unlikely that the entire Web will ever be indexed effectively.

Many of these Web-searching strategies are suggested by HandsNet (<http://www.handsnet.org>), a national, nonprofit organization that enhances the information technology skills of the human services field. HandsNet is headquartered in San Jose, CA, with a Training and Resource Center in Washington, DC.

Tricks of the Trade

Understanding how to unleash the power of search engines is a big step towards successful travel on the Web. But there are other simple tricks to navigating Web pages that experienced Internet users take for granted.

For starters, understand how to use the buttons on the browser tool bar. Netscape and Internet Explorer have very similar operations, but the placement of buttons on the tool bars differ slightly. The first buttons, labeled Back and Forward, permit you to move back and fourth between Web pages. Another way to return to pages already visited is to click on the History button. A list of sites visited over the past several days will appear. Double click on any site listed to be taken immediately to that site.

Dragging your cursor over the page will quickly reveal a symbol resembling the outline of a hand. Anywhere that hand appears, there is something to uncover on the Web page. Another sign of information within is highlighted or colored text, graphics or pictures. Clicking on these words, phrases or sections will immediately transport users to a different section of the Web page or to an entirely new page.

The button labeled Home returns the user to the home page, the first page seen when getting online. The home page can be either the default home page (the one that comes with your browser) or a different Web page designated as your starting place. To set a personal default home page in Netscape, pull down the Options menu and click on General Preferences. See the home page location box marked "Browser starts with" and type in the URL for the page to be designated as a home page.

To set your own default home page in Internet Explorer, use the browser to go to the selected page. Then, pull down the View (or Edit) menu and click on Options (or Preferences). Next, select Navigation and Home/Search Page and click on Use Current. The page you are viewing

is now the default home page.

Click on the Reload (Netscape) or Refresh (Internet Explorer) button when Web pages do not completely load or you receive a transmission error. It's not usual for such mishaps to occur. The Stop button will stop the downloading process.

An often-overlooked browser tool is the Help button. Clicking on Help opens the door to an effective online browser manual. If you are scratching your head about how to access the information you need, try the Help button. When experimenting with a new or updated browser, the Help button can be particular invaluable.

The Bookmarks (Netscape) and Favorites (Internet Explorer) button permits users to open sites frequently without reinventing searches or typing in the same URLs repeatedly. To Bookmark a site, or create a Favorite, go to the location you wish to save and then choose Add Bookmark/Favorite from the Bookmark/Favorite menu. The new Bookmark/Favorite will be added to your list. One click on the Bookmark/Favorites button brings up a menu of your popular sites from which you can make a selection.

To find key words on a page go under the Edit menu and choose Find. Enter the word or phrase you are looking for in the box, press enter and the browser will immediately highlight that word or phrase on the Web page. This is a very useful function for locating specific information quickly.

The Print button does just that, although many Web pages do not print exactly as they appear on the screen. Words that appear as text on the screen may actually be graphics that do not translate perfectly when printed. The printed result can be a partial page with several sections or lines missing, much to the dismay of beginning Web users.

Many Web sites have Site Maps that offer a guide to the entire site. Such maps come in handy when you are searching for information within a complex site and the headings or buttons are not a sufficient guide. You can also use the Search button to search the contents of a particular site.

The Web's reputation as the "World Wide Wait" stems from the sophisticated graphics and images that adorn most pages. Although they are very pleasing and functional, these graphics and images consume precious seconds—or minutes—and constantly test patience. A strategy for speeding up the downloading process is to turn the graphics off and then click on the little graphics icon to load only certain pictures. There are two problems with this shortcut. One, not all browsers permit you to turn the graphics feature off. (Consult a manual or the Help menu for instructions.) Two, many graphics contain important textual information or provide a path for traveling within the site or to new Web pages.

Nagging Connection Messages

To quote a recent *New York Times* article: "The Web hears you knocking, but you can't come in!" Anyone who has spent at least one hour searching the Net has experienced the Internet's equivalent of annoying busy signals, no answers and misdirected calls. Even the most astute experts cannot explain the idiosyncrasies of computers and the Internet.

For example, you've entered a URL and a connection message reads: The server does not have a DNS entry. Sometimes simply entering the address again solves the problem (who knows why). Or assuming that the address was typed correctly, the server you are trying to connect to could be malfunctioning.

An incessantly spinning hourglass or rotating beach ball is one of the World Wide Wait's greatest nuisances. The connection cannot be made because an Internet router somewhere along the path is down. Try again and the path may reopen.

Keeping an eye on the small window at the bottom of the screen may indicate how well the search is going and what the browser is trying to do. The browser might report that it is getting in contact with the host's server or downloading material.

Like a clogged expressway, the Web often has difficulty getting travelers to their destinations because of heavy traffic. Trouble arises when thousands of users try to squeeze simultaneously through the same constricted entrance to the site's server. Also, a site may go down for any number of reasons, such as a lost connection with the site's ISP or the site administrator's decision to take a Web page down temporarily to update its contents.

When encountering these and other roadblocks, the best strategy is to just try and try again.

Evaluating Credibility, Protecting Privacy

The Web is a largely unregulated and unchecked, so don't believe everything you read on there. Straight facts are often hard to find, and uncertainties abound. Is the information true, unbiased and free of hidden sales pitches? In the world of print, the publisher takes responsibility for the quality of the content, and the boundary between news material and advertising is fairly clearly marked. But on the Internet, these issues are considerably more hazy.

Some Web sites seem designed to mislead or even intercept surfers, perhaps for political or commercial reasons. Some sites are outright hoaxes, and others are not what their names make them seem.

The best advice is: be skeptical. Knowing where an Internet resource is coming from and whose voice it represents is one important criteria for evaluating information on the Web. Is a reputable

organization or expert standing behind the information? Does the author supply an e-mail address for readers with follow-up questions or comments?

Checking for currency means noticing when the Web page was produced or mounted and when it was last updated. Noticing if the text follows the rules of grammar, spelling and composition also provides a window to the site's credibility. It may also be useful to assess the site's mechanics, such as how long the page takes to load and whether encryption is available for supplying confidential information.

Following Cookies' Crumbs

The Web has generated Big Brother concerns among many Internet users. It is true that a surfer's movements within a Web site can be closely monitored, primarily through a technology called "cookies." Many sites send unique numeric data, known as cookies, to a computer while it is navigating the site. The cookies shadow the user's movements within the site, record his or her whereabouts, and retain the information for a variety of purposes, usually without the user's knowledge. It's much like attaching an invisible tracker to a shopper as he roams the supermarket aisles, tracing which items he selects, which aisles he avoids, and more.

Cookies help companies to determine which items an online customer is most likely to purchase next, and then offer inducements to close the deal. This leads privacy advocates to claim that recording digital footprints results in exploitation by marketers. Last summer, the U.S. Federal Trade Commission's investigation of 674 commercial Web sites showed that 92 percent gathered personal data, but only 14 percent disclosed what they did with the information.

While such invasions of privacy are real, cookies have beneficial uses as well. They store routine data, such as the user's name, street and e-mail addresses, sparing customers the trouble of endlessly re-entering such information. They store passwords, saving users the hassle of having to identify themselves when they return to a frequented Web site. And, they make online shopping carts work, fueling the popularity of electronic commerce sites such as Amazon.com.

If privacy invasion is your concern, visit the Electronic Frontier Foundation's Web site at <http://www.eff.org>. The San Francisco-based cyber-rights group is dedicated to protecting the rights and promoting the freedom of the electronic frontier. Another consumer ombudsman for cyberspace privacy is the Electronic Privacy Information Center (<http://www.epic.org/privacy>), located in Washington, DC. Also, Junkbusters (<http://www.junkbusters.com>) is a free Web service claiming to help consumers control junk mail and telemarketing calls, and stop the sale of their names to direct-marketing firms.

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Putting Local Government Online

If used effectively, the Internet can make a tremendous contribution to public information and customer service. A home page also helps build a sense of community. Bellevue, Washington, for example, allows residents to check in on the community's two osprey through a Webcam picture updated every thirty seconds, (<http://www.ci.bellevue.wa/webcam>). West Covina, CA dedicates a portion of its home page (<http://www.westcov.org>) to "Kids Stuff." DeKalb County, GA Executive Liane Levetan greets Internet visitors to her government's site (<http://www.co.dekalb.ga.us/welcome.htm>) in French, Spanish and Vietnamese, as well as English.

Don't think that the Internet is too complicated or just for the big guys. Examples provided in this chapter come from small to moderate-size jurisdictions. Each was selected to demonstrate that, when using the Internet, the small can be mighty, too.

Sharing and Partnership Alternatives

Is your local government weighing the expense of a home page? Consider a joint enterprise. The cities of Lincoln and Lancaster County, NE have a mutual site (<http://interlinc.ci.lincoln.ne.us>). Albany and Dougherty County, Georgia share a site (<http://albany.ga.us>). The cooperative effort not only helps stretch government dollars and personnel resources, but also promotes customer service by acting as a "one-stop shop" for government information.

Explore partnering with a local school. Peter Jahn, principal communications analyst with the Public Service Commission of Wisconsin, speculates that teaming up with a local school could offer the students a real-world training tool, while giving the community a ride on the school's federally subsidized Internet connection. (Run the idea past a local government attorney.)

Consider applying the school partnership idea to Web site creation and maintenance, adds Larry Lane, special programs coordinator with the Texas Municipal League. "It could solve resource issues and take advantage of student body talent," he says. Lane further proposes a citywide contest to generate the best Web site design ideas.

School/town partnerships have worked well for several Kansas towns, reports John Howell, a Boeing Corporation executive loaned to the Kansas State Library to assist Kansas communities with Web-site development. Because security issues can be a major concern, Howell recommends putting the community Web pages under a separate account and password. Approximately 200 communities are housed on the state library's system, Blue Skyways, located at <http://skyways.lib.ks.us>.

Of course, not all communities have encountered success in engaging high school students in Web-site management. Montana-based consultant Kathleen McMahon reports that keeping students committed to Web site maintenance can be a chore, given holiday breaks and students' competing activities. "It might be best to have the students do the initial work of designing and setting up the site, and then turn it over to the local government for maintenance and updating," says McMahon. Such an arrangement would also address security concerns because students would not have regular access to the site.

Caution: Free and Easy Web Pages

There are a number of Internet sites that can help you build a simple Web page and host the site free of charge. GeoCities, Tripod, Homestead and Xoom are among the popular sites targeted to individuals with little or no experience with HyperText Markup Language (HTML). Novices also can develop a simple Web page using Microsoft's FrontPage Express or Netscape Composer, and then upload the page to GeoCities or another free Web-hosting site.

But in the world of Web-site development, you get what you pay for! These free-and-easy Web pages are generally fine for small pages with very simple designs, such as a family or small business might require. But their limited features and server space are inadequate for publishing more than a few very basic pages. And in exchange for the free service, most sites clutter sites with advertisements and/or create inappropriate links.

The attraction of these free-and-easy Web page builders is that they seem like a great way to get started on the Internet, especially for small, resource-deficient communities. But the majority of Web-site developers warn local governments not to launch a very simple site "just to get started." It is far better to take the necessary time to devise an overall plan, start small and then slowly add more sophisticated features over time. (For guidance, see *Plan Before Launching*.)

Also, it pays to engage a professional Web-site developer who is proficient in HTML coding. "Anyone can create a Web site with today's programs," says Lane. "But not everyone can create a good Web site." McMahon agrees. "Other Web designers I have talked to say that they also refer to the source code from time to time," she says. "They are glad that they know HTML."

Determine Who Will Use the Site, and Why

Before establishing an Internet site (or when reviewing the effectiveness of a current home page), local government officials should ask and answer two key questions:

- Who will use the site?

- Why will they use it (i.e., what information do they need)?

The most effective written and oral communications consider the reading and comprehension level of the intended audience. Now the Internet must do the same. Visitors to your site may be from your community, your region or your state. Just as easily, however, they may be from the other side of the world. Lincoln-Lancaster County, NE thinks globally, thus, its Webcam tour of the city is also captioned in Japanese, (<http://www.starcitymall.com/webcam/japanese>).

Although most users are likely to be local residents seeking information about community events or government services, others could include nonresidents or firms considering a relocation; tourists planning a visit to the area; or associations investigating convention sites. A locality's home page also may be a potent internal communications tool.

The information systems staff for the city of Walnut Creek, CA clearly understands the sophisticated user who might be surfing to their section of the city's home page, <http://www.ci.walnut-creek.ca.us/isd>, and they organize their online information accordingly. Endearing themselves to vendors, the staff also publishes a list of future projects and bid opportunities as well as directions about placement on the city's bid list.

In preparing your home page for its multitude of potential users, do not forget to design your site for easy access by all users, including those with disabilities. The City of San Jose, California, has formulated disability access design standards, (<http://www.ci.san-jose.ca.us/oaacc/disaccess.html>). In addition, it provides access instructions for users with visual disabilities and those who are deaf or hard of hearing, (<http://www.ci.san-jose.ca.us/access.html>).

Printed materials and videos are wonderful communications tools in that they allow for a wide variation in use. Individuals in a hurry may scan a table of contents, flip through pages, or use the "fast forward" option to move swiftly to a specific piece of information. Others may savor leisurely every word or frame. Unfortunately, many Internet sites fail to consider the full spectrum of utilization practices. To design an efficient site, Internet planners must assess:

- How often will an individual visit the site (i.e., one-time only or repeatedly)?
- What are their expectations for use (e.g., regarding the speed of entry and information retrieval)?

A site that caters to tourists should be structured quite differently from one that will be used repeatedly. Elaborate graphics and images of a beautiful county courthouse, while valuable tourism promotion tools, may be a source of frustration to the local soccer mom or vendor for whom every second is very precious.

But do not entirely exclude the Internet's powerful pictures and graphics to resolve this problem. Consider using GIF files. These graphics make a site appealing, but are smaller in size than photos and quicker to load. Compress photos to be a maximum size of 50k to 80k and place no more than a few photos per page.

Alternatively, avoid showing pictures and graphics on a "thoroughfare" page that must be loaded before users can travel deeper into the site's contents. Bullhead City, Arizona, for example, handles this issue by employing a "pictures" section, (<http://www.bullheadcity.com>). Lincoln-Lancaster County positions its Webcam views of the city on the electronic equivalent of a "scenic turnout." (<http://interlinc.ci.lincoln.ne.us/>), enabling visitors who want a leisurely Internet tour of the hometown to do so without interrupting the flow of the home page for others.

Design for the Lowest Common Denominator

Just as the site architects need to consider the potential global audience, they also must plan for the universe of equipment that may be used to tap their Internet site and the wide disparity in user skill. Thus, they must ask:

- What type of equipment will the electronic visitors be using (e.g., what will be their modem speed, amount of RAM and size of their computer monitor)?
- What is their level of computer expertise?

Most residential users, who constitute a core audience for a local government's home page, may be accessing the Internet via a 28K modem from an early 486 (or perhaps a 386) computer. Many citizens are likely to be using older versions of Netscape or Internet Explorer (IE) browsers, or other less popular browser programs.

Today's standard for Web design usually targets 4.0 browsers and above. But, the best solution for local government Web site architects is to design for the lowest common denominator. "In most cases, a site targeting 3.0 browsers can provide all of the interactivity needed to produce a high-end site," explains Lane.

Howell recommends that Web site developers have both Netscape and IE and view their pages under both. Examining the pages using several browsers, both new and old, will help to identify problems such as pages that load incorrectly or too slowly.

Howell also uses a set of tools to pinpoint errors and irregularities. TagCheck, a free program, catches nonstandard HTML; Bobby, available at <http://www.cast.org/bobby>, checks for common standards of handicapped accessibility; and Browse Master demonstrates what the

Web pages look like on other video screens, including WebTV.

Portions of the local government site geared to residential users should definitely be keyed to minimal technical capacity. It may be wise to also offer a text-only version for users with slow connections or individuals who prefer textual presentations, including many senior citizens. Sections intended primarily for business users, however, could be developed with an assumption of higher technical capability. "But, it is an awful mistake to assume that business users have the latest and greatest software," cautions Howell. Home-based businesses and small firms operating in rural areas are especially unlikely to utilize advanced technology. If there is a compelling reason to use an advanced feature, advises McMahon, go ahead, but otherwise keep it simple and attractive.

In addition to equipment, site planners must consider the technical knowledge of the typical user. When the computer asks if the user will accept a cookie, is it offering Thin Mints or Oreos? Will downloading a program result in computer overload or virus contamination? The Town of Oyster Bay, New York designs its opening page with the novice Internet user in mind, (<http://www.town-of-oyster-bay.org>), and supplements that guidance with a "help" section. Marlboro Township, New Jersey's initial screen puts the issue front and center, immediately asking if you are a first time visitor to the site, and then, based on the answer, it provides appropriate guidance, (<http://www.marlboro-twp.com>).

Choosing an Official Internet Address

Librarians designed the Dewey Decimal System because they realized that efficient information retrieval depended on a standard filing system. The same condition applies to the Internet.

For Local Governments, the Country-Naming Standard

Most local government Web sites follow the country-naming standard rather than the traditional domain naming system. This alternative standard provides the user with information on the server's geographic location, which is particularly relevant information for local governments.

The county-naming standard works as follows. The last segment of a domain name is the Web site's two-letter country code, such as "us" for the United States and "ca" for Canada. Working from right to left, the next code is the official two-letter state abbreviation, such as "mi" for Michigan and "co" for Colorado. Immediately to the left of the state abbreviation is the full name or abbreviation of the local government. The next code, still working from right to left, is a two-letter code identifying the type of local government: "ci" for city; "twp" for township; "co" for county; and, "vi" for village.

Using this system, the Internet address for the city of Salisbury, NC would be

<http://www.ci.salisbury.nc.us>. Residents of Westchester County, NY should find their county's home page at <http://www.co.westchester.ny.us>. Individuals from around the globe similarly should have no trouble accessing the home page for the township of Grand Rapids, MI if its address is <http://www.twp.grand-rapids.mi.us>. An original address that does not follow this system such as <http://www.rafting.org> might be a very clever home page for Grand Rapids township, but it would be hard to find without a search engine. Officials of Orange County, FL slightly bent this rule, but with a purpose, as they selected <http://www.citizens-first.co.orange.fl.us> as their county's home page address.

Registering the Domain Name

Since more than 80,000 Web addresses are taken each month, it is wise to register your domain name early in the course of Web site development. Acquiring a Web address (domain name or URL) is a simple registration process, and there are dozen of domain registration companies. A search for "domain registration" on the search engine Yahoo produces more than 120 domain registration companies! Among the myriad companies are Namekeeper.com, Register.com, NetNames.com and NetworkSolutions.com (described below). Also, almost every ISP will register a name free of charge at sign-up.

It is wise to reserve a Web address even if a site is not yet ready. In the meantime, use the URL to send e-mail and begin building the site, or just hold the domain name until it is needed. But watch that the service is reputable. There are stories of registration services fraudulently registering site names or not doing it at all.

The most widely used registration service has been InterNIC, a cooperative activity between the U.S. Government and Network Solutions, Inc. (NSI). (InterNIC is a registered trademark of the U.S. Department of Commerce.) Since 1983, NSI has been the only provider of domain name registration services in the .com, .net and .org top-level domains, pursuant to a cooperative agreement with the U.S. government. The agreement established that InterNIC administration of the Internet's domain name database and its right to collect fees from other domain-registration services.

In October 1998, the agreement was amended to permit competition and provide greater choice in registration services and prices. Visitors to the InterNIC Web site are now apprised of these changes and encouraged to visit NSI's Web site (<http://www.networksolutions.com>) to begin the registration process.

Evidence of the Web's exponential growth is the number of registrations processed by Network Solutions in recent months. From 1993 through December 1998, Network Solutions registered 3.3 million addresses. But during just the first six months of 1999, it registered 1.8 million more.

Some are being bought by investors, with the hope of selling a catchy domain name at a later date, for an attractive price. Clear, simple root addresses, such as computer.com and support.com, are being resold in the open market for thousands or hundreds of thousands of dollars.

Registration companies charge a fee, about \$120 for the first two years of service. (These fees are in addition to your ISP's monthly service charges.) All companies walk users through a simple and quick registration process, beginning with a determination if the chosen domain name is available. Using the country-naming standard to select the local government's domain name is likely to achieve greater success than using the traditional domain-naming system. For example, the city of Russell, WY should have little or no competition with the Web address of <http://www.ci.russell.wy.us>, as explained above. But using the traditional domain naming system, for example <http://www.russell.org>, could easily result in a message that the domain name is already taken. In this case, <http://www.russell.org/> is actually a personal Web site with no relation to Russell. If the preferred domain name is not available, the registration service will perform multiple searches until an acceptable and available name can be found.

Getting Web Sites Noticed

Once the local government's site is available for public viewing, it's time to get noticed. Publicize the home page address by printing it on all letterhead stationery and on every bid announcement, business card, press release, newsletter, pamphlet, public notice, vacancy announcement and official city document. The URL should be so prominently displayed that all citizens think of using it.

The next task is to link the home page to other relevant sites. Share the address with the state municipal league or county or township association, as well as the state government. Many of these entities maintain lists of local government home pages. Links to listings such as <http://www.officialcitysites.org> and <http://www.piperinfo.com> are wise as well.

Then, get registered with the major search engines. An investment in a home page is wasted if no one can find it. Since about 85 percent of Web surfers use search engines to find what they are looking for, linkages to these hunting devices is a necessity. Start by getting Web-site marketing tips at <http://www.submit-it.com/siprimer.htm>.

There are many ways to register with search engines, including registration services, registration software, manual registration and META tags within the Web site. (In the programming language of HTML, META tags store information that is scanned and then indexed by search engines.) Some Web designers and ISPs also offer this service. A combination of all of the above methods will produce the best results, but take a lot of time.

The easiest way to drive traffic to your site is to use a reputable registration service such as Submit-it.com, Barnsides.com and Register-it.com. Most registration services will submit your Web site to your choice of 400 or more search engines and directories. After registering your site, conduct searches using several different search engines to see how the site ranks among the results.

Design and Content Hints

The best-designed Web sites are both creative and considerate. For instance, most information should be no more than a few clicks away. An emerging rule of Internet site construction recommends that users get to the information that they need in no more than three clicks of the mouse. Organize, test, reorganize, retest and reorganize further to streamline the site-navigation and information-retrieval process.

Check the site for readability. Viewing a computer screen is not the same as looking at a book. Avoid small fonts at all costs and design frames carefully, if at all. Keep in mind that most older browsers cannot read frames or more sophisticated features, such as video clips. Make certain that what people want to read, they can read effortlessly.

Shun graphics that make text unreadable. For example, on one city's home page the top half of the screen is locked into a picture of city hall. As a result, users must squint to read text squeezed into two small frames at the lower portion of the screen. Equally troublesome is a site index embedded in a narrow sidebar so small that it chops off the end of some of the content descriptions.

Consider how to ease the downloading and printing process. Anticipate that each document on the home page will be printed out and/or downloaded. Try not to frustrate users who need only one or two pages of a document by forcing them to download or print 200 pages of material to retrieve it. Whenever possible, give the user an option to either access the full document or just individual portions (e.g., chapters). Break long pages into smaller pages to load more easily and use links to help the user navigate between topics. A rule of thumb is that no individual document or segment should be more than 20 pages in length (less if it contains a lot of graphics or tabular data).

Guard against the opposite problem as well. Do not split documents into too many pieces, making it an equally frustrating and time-consuming process to review the full document and/or print it. Test, reorganize and test again, if necessary, to balance these competing needs.

It comes as no surprise that the World Wide Web is a great resource for novice Web site developers. Sound guidance on Web site design can be found at <http://webreference.com/greatsite.html> and

<http://www.ibm.com/ibm/easy/design/lower/f060100.html>. Or, use a favorite search engine to dig for Web site development advice.

Inform and Serve the Public

Exploit the power of the Internet to speak directly to constituents about the local government's mission. Officials of Yellowstone County, MT put the following statement front and center on their Internet site: (<http://www.co.yellowstone.mt.us>)

The mission of Yellowstone County is to improve the function of County government to serve its citizens and the region as efficiently and cost effectively as possible through joint effort of our employees and leadership. This Web site is dedicated to bringing services and proving public information to you in a simple, cost efficient manner. We are always striving to improve the quality of information and services available and welcome your feedback. To that end, here are two important E-mail addresses:

- Commissioners' Forum (forum@ystone.mt.gov): Use this address as a means to voice your opinions and concerns about important issues.

- Web site Feedback (webmaster@ystone.mt.gov): Did you have difficulty locating something? Problems with the display? Let us know about it so that we can fix it.

Make your opening page count. A first page should not only look good, but also make information retrieval. The Massachusetts Municipal League does an excellent job as its opening page (<http://www.mma.org>) serves as a easy gateway to and overview of the site's contents.

Other home pages with great beginnings and helpful pathways include:

<http://www.ci.anchorage.ak.us>

Anchorage, AK

<http://www.bullheadcity.com>

Bullhead City, AZ

<http://www.lee.ga.us>

Lee County, GA

<http://www.to.montclair.nj.us/township/index.cfm>

Montclair Township, NJ

<http://www.ci.issaquah.wa.us>

Issaquah, WA

<http://www.radnor.com/government/government.html>

Radnor Township, PA

<http://www.ci.salisbury.nc.us>

Salisbury, NC

<http://www.ci.shreveport.la.us>

Shreveport, LA

<http://www.westcov.org>

West Covina, CA

Radnor Township does several things worth emulating. It places a list of key elected and appointed officials (with e-mail links) at the bottom of the site's first page, along with the township's mailing address and main phone number. It also places the navigation buttons on the right side of the page, a feature that allows right handed users to avoid dragging the pointer across the text.

Content Is Key

Most local government Web sites list their elected officials and supply biographical and contact information for them. It is also common for cities, towns and counties to furnish general program information (e.g., role of the county clerk, community calendar, schedule for leaf collection). But few jurisdictions provide the kind and quality of information that would help citizens to better understand and participate in the operations of government.

An exception is the Cyber Democracy program of King County, WA (<http://www.metrokc.gov>), which uses its 24/7 Web site to bring residents into the democratic process more effectively. For example, Cyber Democracy encourages citizens to read budget proposals and other documents day or night, and then submit testimony without having to attend council meetings.

A well-constructed home page not only advances citizen participation but also facilitates customer service. Since most local government employees have a computer at their fingertips, a site that covers the following topics would empower staff to answer basic questions about government operations, thus speeding customer service. Moreover, a "content-rich" site can help members of the media on deadline who need an answer fast.

Consider incorporating the following categories of information on your local government home page. Much or all of this information should be in print and available for uploading.

Brief Overview of the Government. Americans are a highly mobile group of people. Many current community residents were not born or raised locally and may have no idea that a county judge is not a judicial official, what a prothonotary does (acts as a chief notary or clerk), or how a representative town meeting operates. The Web page offers an opportunity to explain and educate.

Insist that all local government departments and service areas participate in this effort. Your Internet home page should not have six pages of material from the fleet management staff but none from the fire, police or recreation departments. Minimum standards for content about each department and program area should be set by senior management (e.g., mission statement, key staff names and contact information).

Enhance customer service and government accountability by giving contact information for all key employees (i.e., name, title, phone and fax number, and e-mail address). Identify their functional responsibilities. (Titles alone may not be sufficient, for example, if the auditor in your jurisdiction does more than oversee the government's financial activities.) A glossary of terms, similar to the one posted by the Village of Buffalo Grove, Illinois, is a valuable addition as well, (<http://www.vbg.org/boards/terms.htm>).

Budget Information. A brief summary of the budget should be published online as soon as the budget process begins. Similarly, make available reports on the status of projects financed by past bond issues. Salisbury, North Carolina does an outstanding job of posting budget information and other related financial reports (e.g., audit reports) on its site, (<http://www.ci.salisbury.nc.us/finance/index.htm>).

Citizen-Participation Opportunities. Foster citizen participation in local government by

conspicuously displaying information about the legislative body and any citizen advisory boards or committees. List the members of each panel, the dates their terms expire, when the groups meet and the policies for election or appointment to these bodies. Also feature:

- meeting announcements
- meeting agendas
- meeting minutes
- proposed ordinances.

For an example of the possibilities, see the Lafayette, Louisiana city council's page (http://www.lafayettegov.org/council_index.html)

Directions to Government Facilities. West Des Moines, Iowa places a comprehensive set of community maps on its home page, <http://www.city.west-des-moines.ia.us/maps.htm>, including maps showing the location of all municipal buildings, parks and schools, as well as street and zoning maps of the city.

Emergency Preparedness Information. Residents of Leon County, FL may obtain comprehensive hurricane preparation and recovery guidance from that jurisdiction's home page, <http://www.co.leon.fl.us>.

Forms, Permit Applications and Certificates. If a form or permit application is in use by your government, make it available online. West Des Moines, IA puts many of these items at residents' electronic fingertips, including applications for building, electrical, mechanical, and plumbing permits; requests for approval to hold a dance or to reserve a shelter at a city park; employment applications; and park and recreation and voter-registration forms.

Use this opportunity to also educate the public on the actions that require a permit or other type of government authorization. Lexington, Massachusetts does this by including a complete description of all licenses and permits required by the jurisdiction and contact information for the office with the licensing or permitting responsibility, (<http://patriot.ci.lexington.ma.us/permits.htm>).

Another good example of putting permits and fee information online is provided by the city of Great Falls, MT (<http://www.city-of-great-falls.com>). The city's *Citizen's Guide to Development*, which includes downloadable forms, flowcharts and policies covering a variety of permitting processes, is available online. Handling these procedures electronically presents an excellent opportunity to educate the public on the range of everyday activities that require a permit or other type of government authorization.

Due to limited resources and skills, some local governments are outsourcing electronic-commerce applications. California's Orange County sells copies of birth, marriage and death certificates online through a private service called GovernLink. This service, developed and operated by Lockheed Martin IMS and Oracle Corporation, costs the county nothing and saves staff the headache of maintaining an electronic-commerce application system.

When planning e-commerce applications, listen to the customer, says consultant Patricia Seybold. In an interview in *Government Technology* magazine, Seybold explains that customers are concerned about four things when they shop on the Internet for a product or service: time, convenience, avoiding aggravation and peace of mind. By keeping those points in mind when designing government e-commerce solutions, a local government can deliver better results.

Job Postings. Advertising positions on the Web site might attract former residents back to town (e.g., young adults returning to be closer to family) or entice home-based workers looking for part-time employment. Note in particular that Lenexa, Kansas also allows applicants to complete an on-line job application, (<http://www.ci.lenexa.ks.us/vshrapps/hrapps/applformreturnnew.asp>).

Municipal Code, Ordinance, and Procedural Rules. Facilitate access to documents needed by homeowners and builders, business operators and other citizens. Consider posting procedural rules such as those that govern who may speak at a council or commission meeting.

Official Newsletters, Press Releases, Reports and Speeches. If space allows, archive past editions or noncurrent material on the site.

Public Records. Residents of Lincoln-Lancaster County, NE can conduct online searches of the animal license database, employee telephone numbers and daily fire department "run" reports. Online databases also may be queried to determine a citizen's polling place or city council district, or to locate property-related information.

Service Hours and Schedules. Display general operating hours on the opening page of the Internet site. If departments or facilities have different service times, indicate so wherever appropriate. Publicize service schedules (e.g., trash collection cycles).

Planning Documents. If the local government has formulated strategic, technology, and zoning plans, post them on the site.

Tax and Fee Data. Describe for residents which taxes are imposed and the applicable rates as well as payment requirements and protest options. Enumerate the fees assessed for various government services (e.g., the issuance of a marriage license or reproduction of a government document), as is done by the Town of Lexington, Massachusetts (<http://patriot.ci.lexington.ma.us/fees.htm>).

Voting and Election Information. Advise residents how and where to register, when elections are held, how to determine their polling place and district/ward, which offices are scheduled for which election and the procedures to follow in filing for office. If the jurisdiction has electronic voting equipment, add a description of how to vote. Discuss initiative and reference options if those are available to community residents. Most importantly, post election results promptly. For an example of the possibilities in this regard, see <http://www.co.yellowstone.mt.gov/elections>.

Essential Links. If the local Chamber of Commerce, Convention and Visitors Bureau or economic development agency has not taken the lead on publishing economic development, industrial relocation or tourism promotion material online, the local government's home page should address these pivotal issues. If they have, make certain that links to those sites are displayed prominently as is done by Shreveport, LA

(<http://www.ci.shreveport.la.us/service/businfo.htm>).

Get and Stay Organized!

Organize the site by users' needs, not by internal departments. For ease of reference, Radnor Township, PA groups its online offerings by category, i.e., "For Our Residents," "For Potential Residents," and "Doing Business in Radnor." Shreveport clusters material for individuals or corporations seeking to start or relocate a business in the city in its Business Information Center.

Have an e-mail link on each page to promote effective customer service. If a person is online and realizes that he/she needs more information than is available, don't force the user to telephone or write for additional material. Champion efficient customer service by having an e-mail link for each document.

Develop an index of contents (i.e., site map) to speed information retrieval. Search engines for most home pages, if available, are cumbersome to use. Let them be a tool of last resort. Instead, give electronic readers an index of contents to peruse first. Make certain that all documents on the site map are linked to one of the navigation buttons. If they are not, notify users of that fact. Also, list all recent additions to the site.

Cut the jargon and avoid over-used phrases like "What's Hot." Instead, explain precisely which documents are associated with which sections (e.g., recent press releases or the mayor's weekly newsletter). Also, sweat the details. Remember the small touches (e.g., area codes) that enhance customer service.

Keep It Current

Make certain that the site's content is up-to-date and that links work. Before any document goes onto the site, it should be entered into a master log and given dates by its author for refreshing, transfer to an online archive or removal. Using this simple system, the Webmaster (person who maintains the Web site) can check the log and remove or transfer documents when appropriate or prompt the appropriate party to refresh the material.

In addition, the Webmaster (or another staff member) should be charged with the responsibility of checking weekly that all links from the home page and e-mail addresses are working and that general information, such as the following, is correct:

- addresses

- employee names

- meeting notices
- service hours (for holidays, seasonal changes)
- telephone/fax numbers (including the area code).

The Town of Eastchester, New York reaches out to its residents by allowing them to apply for automatic notification of key home page updates, (<http://www.eastchester.com/subscriber.html>).

Date each page of information. For each document, list the date it was written and the last time it was updated. This is especially important for budget documents, proposed ordinances, candidate lists for upcoming elections, and other items subject to frequent change.

Finally, focus on skill building. Just as our society was transformed forever by the introduction of the airplane, the assembly line and the nuclear bomb, so will technology shape our lives every day forward. Relish the opportunity to use an Internet site to learn about technology. And, help local government staff and elected officials to gain Internet skills that can enhance all areas of government operations.

Local Government Online: Case Studies

Numerous small communities are creating Web sites to market regional tourism assets, promote economic development and encourage local teens to participate in recreational activities. Consider the following examples.

Partnership Markets Region's Tourism Assets

Although it may not be the hot spot of the year, an increasing number of visitors are being attracted to southwestern Wisconsin, thanks to a cost-effective alliance called the Wisconsin Community Information Partnership. WiCIP is a cooperative venture between the University of Wisconsin-Platteville, the University of Wisconsin-Extension and six southwestern Wisconsin communities. It functions as a central clearinghouse of regional information for citizens, businesses and visitors.

The partnership is promoting the region's tourist attractions through a variety of sophisticated electronic information tools, including Web access, audio-text (pre-recorded) telephone messages and fax-back services. To finance the effort, WiCIP has engaged several sponsors, including area banks, supermarkets, insurance agencies and the electric co-op.

WiCIP's Web page markets the region's tourist attractions, recreational offerings, economic-development assets, community resources, employment opportunities and more. According to Molly Bircher of the Docking Institute for Public Affairs, Fort Hays, Kansas, WiCIP's site is one of the best examples of a community page that presents a united front. For more information:

Michael Dalecki
University of Wisconsin-Platteville
Phone: (608) 342-1807
E-mail: dalecki@am.uwplatt.edu
URL: <http://wicip.uwplatt.edu>

Affordable Tool for Economic Development

The city of Slater, MO always has recognized the Internet as a means of advertising the community to potential families and businesses. In just a few months, they've seen proof that it works. As a result of its Web presence, Slater is now called "home" by an additional two families. For a community of just 2,200 people, that's a pretty decent return!

Slater is undergoing a rapid expansion, thanks to a valuable working partnership between city and private resources. The Web site itself, the creation of a local company, RAM's Information & Business Services, is a working example of that partnership.

In order to finance the cost of the Web site, RAM attempted to get at least two to four local businesses to underwrite the cost. In exchange for their sponsorship, RAM also produces a site for each business. In this way, the community receives a free Web site, and local businesses receive an Internet presence in exchange. To promote the economic growth of Slater, local businesses also are encouraged to produce and link their own respective sites on the Business Directory area of the site. If they don't have a Web site, RAM will create one for the local businesses for a minimal monthly fee.

So long as roles and responsibilities are clearly delineated, this formula is an ideal model for a community that might not otherwise be able to afford the cost of creating, housing and maintaining a Web site. Everyone wins.

In addition to current relocation information, the Web site offers information about utilities, industrial development, city services and contacts. Slater's long-term goal is to use the site to attract computer and technology-based business. For more information:

Ron Monnig

RAM's Information and Business Services

Phone: 660-529-2929

E-mail: ron@ramsinfo.com

URL: <http://www.cityofslater.com>

Catering to Teens

It is fitting that a small village named after a famous 18th century is discovering a new presence on the World Wide Web. Located approximately 18 miles east of San Francisco, Moraga, CA, a semi-rural community of 16,000, has hosted an Web site since 1997. The site was completed without outside help and is maintained by local government administrative staff.

Perhaps the most interesting thing about Moraga's Web site isn't actually found on the site at all. After the creation of the site, the community's young people voiced a need for a teen-oriented site, which can today be found at <http://www.moraga.com>.

Recently, the site will be handed over to six teenage Webmasters, who redesigned and maintain a more sophisticated teen-oriented look. The six students, from three different area schools, range in age from 14 to 18. Teens now have a place to scan for area activities. Listed are sporting leagues, ski trips, dances, community service opportunities and other timely events of interest.

Morago Town Manager Ross Hubbard laments: "The teens added several features that I would like to incorporate into the town Web site, but the features are so advanced that I personally don't know how to make them work!" For more information:

Ross Hubbard

Town Manager

Phone: 925-376-2590

E-mail: manager@moraga.ca.us

URL: <http://www.ci.moraga.ca.us>

Portions of this chapter appeared as an article written by Sharon Lawrence, an Austin, TX-based consultant. Lawrence has served as director of research for the National Association of Counties and director of federal affairs for the National Association of Towns and Townships. Contact Lawrence by e-mail at sharontx@concentric.net.

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Encouraging Public Access and Use

With telephones, computers and other electronic devices so pervasive in today's world, it would seem that just about every American has easy and affordable access to the Internet's vast resources. But that's simply not true.

Yes, recent statistics of computer ownership and Internet use are impressive. Nationwide, 42.1 percent of U.S. households own a computer, up from 24.1 percent in 1994 and 36.6 percent in 1997 (an increase of 74.7 percent and 15 percent respectively). Internet access also has grown significantly so that 26.2 percent of U.S. households are now online, compared to 18.6 percent in 1997—an increase of more than 40 percent.

But while more Americans are connected than ever before, a persistent digital divide exists between the information rich and the information poor. Data on disparate telecommunications access and use is published in *Falling Through the Net: Defining the Digital Divide*, the July 1999 report of the U.S. Department of Commerce, National Telecommunications and Information Administration (NTIA). The report, NTIA's third in the *Falling Through the Net* series, relies on December 1998 U.S. Department of Commerce Census Bureau data. It can be downloaded off the NTIA Web site at <http://www.ntia.doc.gov>.

A Widening Digital Divide

The report's most troubling conclusion is that the digital divide separating the information "haves" and "have nots" is widening. Soaring computer access and use among the "haves" (Whites, Asian/Pacific Islanders and higher-income, more-educated, dual-parent households) contrasts sharply with minimal access and use among the "have nots" (families in rural areas or central cities, people with lower incomes and education levels, certain minorities, and the young).

The data also show that those groups that already were plugged in are now far more connected, while those groups that had little or low connectivity rates have increased much less quickly, explaining why the digital divide expanded over time. Among the most significant disparities reported by NTIA are the following:

- Regardless of income level, Americans living in rural areas are lagging behind in Internet access. At the lowest income levels, those living in urban areas are more than twice as likely to have Internet access than those earning the same income in rural areas.
- The contrast between low-income households (earning between \$5,000 and \$9,999) in rural American and high income households (earning more than

\$75,000) in urban areas is particularly acute: 8.1 percent versus 76.5 percent for computer ownership, and 2.9 percent versus 62 percent for Internet access.

- Households with incomes of \$75,000 and higher are more than 20 times more likely to have Internet access than those at the lowest income levels, and more than nine times as likely to have a computer at home.
- Whites are more likely to have access to the Internet at home than Blacks or Hispanics have from any location.
- While senior citizens have the highest penetration rates for telephones, they trail behind all other age groups on computer ownership (25.8 percent) and Internet access (14.6 percent). The contrast is particularly striking between rural seniors (23.3 percent computer ownership, 12.4 percent Internet access) and urban 45-54 year olds (55.3 percent computer ownership, 36.5 percent Internet access). Young rural households are also lagging behind at 27.7 percent computer ownership and 13.3 percent Internet access.

Opening Up Access: Where to Start?

"Ensuring access to the fundamental tools of the digital economy is one of the most significant investments our nation can make," says Secretary of Commerce William Daley in introducing the NTIA report. Public access to computers and the Internet at local schools, libraries and other public places is a critical part of his plan.

Public Places and the E-Rate

It comes as no surprise that people without home computers are almost 1.5 times more likely than people with home computers to access the Internet through public libraries or community centers. Those who are less likely to have Internet access at home or work (e.g., those earning less than \$20,000, certain minorities, retirees and the unemployed, and those without a college degree) particularly rely on public facilities for a lifeline to the digital economy.

Many schools and libraries have recently acquired computers and Internet access through the universal service E-rate Program created by the Telecommunications Act of 1996. In its first year of operation, the E-rate Program funded \$1.3 billion in discounts on telecommunications services, Internet access and internal connections for schools and libraries nationwide. The program is administered by the Schools and Libraries Division (SLD) of the Universal Service

Administrative Company (USAC), a private, nonprofit organization. (The SLD was formerly the Schools and Libraries Corporation.)

As explained on the USAC Web site, all communities—including public and private schools, public libraries, rural health care providers, low-income neighborhoods, and remote communities in rural areas—are eligible to seek discounts for communications services from the Universal Service Fund (USF). Details on program eligibility and an online application forms are available at <http://www.sl.universalservice.org>. (For background information, see *What is the Universal Service Fund?*)

Approximately 640,000 classrooms acquired Internet access in the program's first year, serving 32 million school children overall. Despite this accomplishment, the program has been controversial from the start because its discounts are generated by adding fees to customers' phone bills.

Long-distance telephone companies initially agreed to the E-rate Program in return for some of the benefits of deregulation they received in the 1996 bill. But telephone companies and some lawmakers oppose the E-rate and the Federal Communication Commission's (FCC) administration of it, viewing the approach as an illegal tax to fund a capital construction program for school and libraries. E-rate supporters, including Sen. John "Jay" Rockefeller IV (D-WV), call the program "the most important educational advance since the GI Bill of Rights." To understand what the E-rate is about, says boosters, visit any library or school, especially those in low-income and under-served communities.

Rural Libraries

For rural libraries, the universal service E-rate Program is a particularly critical resource. A recent *National Survey of U.S. Public Library Outlet Internet Connectivity* found significant disparities among libraries in terms of their Internet services. The good news is that 83.6 percent of all public library outlets have some type of connection to the Internet. But rural public libraries continue to lag behind their urban and suburban counterparts. The study was sponsored by the American Library Association, the U.S. National Commission on Libraries and Information Science and the Gates Library Foundation.

Rural libraries with little or no public Internet access may wish to explore other resources, in addition to the E-rate. Some libraries will benefit from the National Cable Television Association's (NCTA) plans to wire cable TV lines to public libraries nationwide at no charge. The cable industry also intends to provide libraries with cable modems that, according to NCTA, can move text, voice and pictures 50 to 100 times faster over new cable TV lines. NCTA also says that this technology has already been implemented in 2,500 schools across the United

States. Of course, not all companies in all regions will provide this service. For more information, contact your local cable company or visit the NCTA Web site at <http://www.ncta.com>.

Foundations and Corporate Gifts

Some foundations are helping schools and libraries in distressed areas acquire telecommunications equipment and services. An example is the Gates Learning Foundation (<http://www.gatesfoundation.org/LearningFoundation>) of the Bill and Melinda Gates Foundation, which was conceived in 1997 as the Gates Library Foundation. By the end of 1998, the foundation had awarded grants of more than \$22 million to 1,300 libraries in 28 states. The grants brought Internet access and staff training and assistance to public libraries in low-income communities.

An illustration of the Gates Learning Foundation's impact on rural communities can be found in Bay Minette, AL, where 21 percent of the 8,000 residents live below the poverty level, according to the 1990 Census. One of four adults is functionally illiterate.

Since the Gates computers landed in town, reports the Bay Minette librarian, residents who have never before ventured into the public library are now coming through the doors. Beginning Internet users are employing the computers to prepare resumes, research job possibilities, do homework, explore their family roots, look up medical information, send e-mail, and just see what all the fuss about the Web is really about. Interestingly, librarians at newly computerized sites say that conventional book circulation has increased as well, as computer users browse the book aisles.

Profiles of foundations and corporations that might offer grants or computer equipment are available through the Foundation Center, an independent nonprofit organization established by foundations in 1956. The Foundation Center is not an operating foundation and does not fund projects. Its mission is to increase public understanding of the foundation field by maintaining a comprehensive database on foundations and corporate giving programs, and by analyzing trends in foundation support of the nonprofit sector.

The Foundation Center disseminates information through its national collections in New York City and Washington, DC and its field offices in Atlanta, Cleveland and San Francisco. An international network of more than 200 cooperating libraries house the Foundation Center's print resource materials and CD-ROM databases and have trained staff available to assist grant makers. To learn more about the center's programs and services, or to find the library collection located closest to you, visit the Foundation Center's Web site at <http://fdncenter.org> or call Customer Service at 1-800-424-9836.

Community Access Centers

Community Access Centers (CACs) are public places where people have access to computers and computer-related technology, such as the Internet, usually at no cost. In addition to providing access to equipment, these "labs" also may offer computer training, especially to low-income citizens. Community Access Centers also go by other names such as Community Technology Centers, Community Resource Centers and Community Computing Centers.

Although CACs vary considerably, all are committed to equitable access to computers and the Internet. According to the Community Technology Center's Network (CTCNet), some sites are stand-alone centers; others operate as part of a larger organization, such as a multi-service agency or museum, job-training center, shelter or cable access center. All sites serve people who might otherwise have little or no opportunity to use, or to learn how to use, computer technologies.

CTCNet is a diverse network of more than 250 CACs across the United States. The Newton, MA-based organization is a project of the Education Development Center, Inc., supported by the National Science Foundation and other funders. The CTCNet Web site, located at <http://www.ctcnet.org>, has a host of resources, including a comprehensive *Center Start-Up Manual*. The manual can be purchased from CTCNet or downloaded from <http://www.ctcnet.org/toc.htm>, free of charge.

The U.S. Department of Housing (HUD), the U.S. Department of Commerce and the U.S. Department of Education all operate programs that fund CACs of one type or another. HUD-funded centers, called Neighborhood Networks (<http://www.hud.gov/nnw/nnwindex.html>), are located in privately owned HUD-assisted and/or HUD-insured housing. Commerce's Telecommunications and Information Infrastructure Assistance Program, or TIIAP (<http://www.ntia.doc.gov/otiahome/tiiap/index.html>) is a merit-based grant program that supports CACs and other telecommunications and infrastructure projects. The Department of Education's Community Technology Center's Program (<http://www.ed.gov/offices/OVAE/CTC>; upper-case letters are required) supports model programs that demonstrate the educational effectiveness of technology in urban and rural areas and economically distressed communities.

Free PCs! Free Internet Access!

The ever-changing world of technology and commerce is promoting a new deal just about every week. As the personal computer (PC) becomes inextricably linked to the Internet, some PC makers (e.g., Compaq and Gateway) are offering free Internet access as an inducement to sell more products. Meanwhile, several Internet Service Providers (ISPs) are giving away computers, or subsidizing their cost, to attract new subscribers. Yet another group of companies, such as Free-PC, Ins., is distributing free computers to users who agree to view online advertising.

"It's a new twist on a time-tested marketing ploy," reports a July 1, 1999 article in the *Wall Street Journal*. "Razors are cheap because profits come from selling blades. Cellular-phone companies have signed up millions of new customers by subsidizing the cost of phones."

Both America Online and Prodigy Communications Corporation now offer a \$400-value computer, or \$400 rebate, to anyone who signs up for three years of unlimited Internet access, at a fee of about \$20 a month. In effect, users are leasing their PCs over a three-year period, for a total price of approximately \$720. The free computers are low-end machines that are unsuitable for playing the latest 3-D computer games but are generally adequate for handling simple applications like word processing, e-mail and Web browsing.

Other companies that are offering similar deals include Gobi, DirectWeb, InterSquid.com, and Microsoft Network (MSN). The rebates can be applied to high-level PCs, but they may be restricted to certain manufacturers or distributors, such as eMachines, Best Buy and Staples.

Donated Computers: The Good and the Bad

Continual upgrades at private companies and government agencies are producing a glut of used computer equipment. Nearly every state operates a surplus property distribution program that sells used equipment to local governments and nonprofit organizations at steep discounts. The National Association for the Exchange of Industrial Resources (<http://www.naeir.org>) collects and processes donations of good quality merchandise from U.S. corporations and then redistributes the goods to qualified schools and nonprofit groups. Even local enterprises—branches of corporations, banks, small businesses and entrepreneurs—donate used computers to schools, libraries and charitable organizations, in exchange for a tax write-off.

But before you jump at the opportunity to acquire a used computer for one-tenth of its original cost, think carefully. Mark Tibbetts, TIIAP program officer, speaks for many experts in this cautionary note:

One of the repeated lessons from TIIAP projects relates to the use of donated/used computers. Often our grantees find that the process and associated costs of rehabilitating and maintaining used equipment far exceeds the initial costs that would have occurred if they had simply bought new equipment. This is particularly true if the PCs have proprietary components. Also, grantees trying to use current applications (e.g., latest browsers, newest plug-ins) often encounter significant problems when using donated/used equipment.

Schools, long accustomed to taking just about anything in their effort to become technologized,

are finding that donated equipment is more expensive in the long run. Emily Vickery, a rural Colorado-based school technology consultant, cites a long list of costly problems, including high maintenance costs, especially on older, Windows-based machines; difficulties in finding competent technicians anywhere nearby; problems with upgrading memory and modem speed; and lack of training in how to use the computers effectively.

Vickery advises schools and communities to purchase new equipment with a revolving budget, including training, upgrade and repair. She also encourages all branches of a community—law enforcement, medicine, education, libraries, businesses, utilities, local government—to plan together to avoid duplicative expenditures and lost time.

E-Commerce is Here to Stay

Electronic commerce—e-commerce for short—has arrived. Small-town businesses must either ride the wave or face a sinking ship. If the firms in your town are still ignorant or wary of the Internet's e-commerce potential, spread the word and help to create opportunities for business owners and managers to become Internet literate.

Although the Internet's impact is difficult to quantify, several recent studies paint a dramatic picture. A June 1999 study by researchers at the University of Texas showed that the Internet generated about \$301 billion in revenue in 1998, almost as much as the automotive industry. Southern Illinois University's 1998 survey on small business and the Internet found that small firms using the Internet to communicate with customers, market their product and make purchases are growing, on average, by 9.8 percent a year. Companies that ignore the Web and lack computers are growing only 5.5 percent a year.

Perhaps this is because doing business over the Internet results in cost savings of about 5 to 10 percent, according to Forrester Research, a market-research firm in Cambridge, MA.

The most robust e-commerce action is business-to-business transactions. In 1998, American companies had \$43 billion worth of sales to one another over the Internet, five times the consumer retail total, says Forrester Research. Business-to-business electronic sales are likely to swell to \$1.3 trillion by 2003. E-commerce clearly cuts significant costs out of the supply chain and facilitates better procurement and resource planning.

As online business grows faster than anyone expected, it is changing the face of commerce. The buying frenzy is succinctly summed up by Andy Grove, chairman of semiconductor company Intel Corporation, in a recent issue of the *Wall Street Journal*:

The Internet-based marketplace is causing a huge re-engineering of business. It is doing to commerce in the 1990s what Japan's quality and just-in-time practices did to the manufacturing industry in the

1980s. It matches buyers and sellers, so that buyers can become infinitely informed without even talking face to face.

Encouraging Local Businesses to Adopt E-Commerce

Community leaders can play a vital role in encouraging local businesses to understand and assume the power of e-commerce. Doing so will undoubtedly strengthen the local economy and generate new sources of employment. About 55 percent of all new jobs arise from the expansions of existing businesses, and 44 percent are created by start-up companies. The numbers alone demonstrate the importance of empowering local firms with Internet fluency.

Here's how to make it happen in your community:

- Research what services and programs are available in your region to impart Internet skills to small businesses. (See *Internet Masters Acquire, Spread Computer Skills.*) Contact nearby organizations and agencies, including local Chambers of Commerce; local or regional librarians (librarians are Internet experts); regional planning or economic development districts; rural electric cooperatives or local telephone companies (especially if operates an ISP); extension services; Small Business Development Centers; community college; and civic associations.
- Collect and display brochures of Internet training programs in prominent locations such as town hall, public library, grocery stores, motor vehicle administration office and other frequented spots.
- If a local economic developer is employed in the area, make sure that she or he understands how to use e-commerce to help retain, expand and grow local firms. Traditional economic developers focus nearly exclusively on business recruitment.
- Engage the local newspaper, television or cable company to do a series on "How to do business on the Internet." Feature case studies from successful local business owners and entrepreneurs.
- Organize a Web Fair to introduce local businesses to Web site developers, and visa-versa. The Region 9 Economic Development District of rural Southwestern Colorado has organized two successful Web Fairs, where local businesses visited with 20 area Web development professionals. "Web site developers exist anywhere there is an Internet hook up," says Region 9's Stuart Cohen. The Internet is now the region's first source of marketing for small businesses, so much

so that Cohen must remind firms about maintaining other sources of traditional marketing.

· Cosponsor a seminar series on e-commerce, perhaps using the talent of organizations, agencies and companies outside the region. Contact the state government department of economic and community development/commerce; state rural development council; state association of local governments (towns; cities and counties); state college or land grant university; federal government offices (of Economic Development Administration; Small Business Administration); state office of the Chamber of Commerce; private foundations and corporations interested in e-commerce development (visit the Foundation Center Web site at <http://fdncenter.org>); state library; regional center for rural development; and national community and economic development organizations.

Access in Action: Case Studies

Despite the persistent digital divide, there is action afoot in rural areas across the country to spark interest in the Internet and to show residents what access to telecommunications can mean for them and their communities. Getting technology into the hands of people is key. Consider the following examples of successful public-access strategies.

Facilitating Public Access in Rural Kentucky

Choosing to Learn, a project of the Mountain Association for Community Economic Development (MACED), is providing technological resources for individual and community learning in four rural eastern Kentucky counties. Rural entrepreneurs, individuals and communities that are committed to sustainable community development are benefiting from the tools for networking and learning developed by the project.

Project funds were awarded by the National Telecommunications and Information Administration's (NTIA) Telecommunications and Information Infrastructure Assistance Program (TIIAP) in October 1998 and will sustain the project through September 2001.

Project features include: (1) CyberGuides, a program in which technologically gifted high school students get special community college training and in-turn provide technical support on a fee-for-service basis to business and community organizations, while developing their own business skills; (2) a laptop-lending program and kiosks in sites with high use by low-income residents; (3) interactive community Web sites that include open discussion forums to increase

involvement in public affairs; and (4) cross-community learning via the first interactive Web site for communities committed to sustainable community development created by Communities by Choice, a new national community learning network.

Young people often leave rural communities in search of employment in larger cities. As a result, local entrepreneurs and community organizations struggle to sustain business and investment in the area. Choosing to Learn is responding to these problems by using the skills of technologically-gifted young people to serve rural communities which will, in turn, open up possibilities for their own futures. By providing access to the Internet at convenient gathering places, and through laptop lending programs, Choosing to Learn is encouraging rural residents and entrepreneurs to increase their Internet use.

MACED is partnering with action teams in four counties that were developed under the Sustainable Communities Initiative. Other partners include two community colleges, Southeast Community College and Hazard Community College and local high schools in the four counties. Appalshop, a media arts and education center, is developing workshops for CyberGuides. Also, the Central Appalachian Peoples Federal Credit Union is providing financing for personal computer purchases to qualifying members of the action teams. For more information:

Don Harker

MACED

Phone: 606-986-2373

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URL: <http://www.maced.org>; <http://www.communities-by-choice.org>

Reprinted, with updated information, from the TIIAP Web site, Search Funded Projects, at <http://www.ntia.doc.gov/otiahome/tiiap/index.html>.

Community Network in Northwest Montana

In the northwest corner of Montana, sandwiched between Canada, Idaho and the Rocky Mountains, sits Lincoln County, an area in transition from a logging to a more tourist/service-based economy. A successful evolution depends on dependable electronic access to the rest of the world.

A few years ago, Lincoln residents concluded that if they were ever going to jump onto the information super-highway, they had better take matters in their own hands. With no local Internet provider, they banded together and created one. In October 1994, community leaders established a nonprofit organization and installed an Internet node at the library in the Libby County seat.

The community network, named KootNet after the Kootnai Indians who first inhabited the area, was established to provide local Internet access to the community. In addition to maintaining a server, KootNet boasts 12 public-access Internet workstations and recently networked the local high school's computer lab. It regularly conducts training classes and has hosted several telecommunications summits for the region.

The initial effort was accomplished with volunteer labor, recycled materials and a \$50,000 capital investment from the county. KootNet's first systems administrator was a senior citizen who donated his services for nine months. Today, subscriber fees fund three positions, including a full-time system administrator, a part-time bookkeeper and a shared technical-support position at the library.

The three-person staff maintains the network, supports the KootNet Web site and offers technical support to businesses interested in establishing a presence on the Web. As a result, 87 businesses now have Web sites, and 210 local firms are listed in the KootNet yellow pages. Among the online successes is Michael Cohan, a dealer of out-of-print books, who was barely breaking even before KootNet. Today, Cohan grosses almost \$100,000 in annual revenues, in large part due to electronic commerce.

KootNet has become a key component of the area's economic development scheme. Having local Internet access enables many businesses and professionals to relocate to this remote area and enjoy its spectacular scenery. For more information:

Frank Fifield

KootNet

Phone: 406-293-3534

E-mail: sysadmin@libby.org

URL: <http://www.libby.org>

Technology Spurs Rural Vermont Business Start-Ups

The Vermont Telecommunications Application Center (VTAC) is boosting economic development in the state by helping small businesses, nonprofit organizations, and individual entrepreneurs better understand how to use existing telecommunications technology, services and products to enhance their operations.

VTAC is working to make Vermont more attractive for small business startups in rural areas by ensuring adequate use of telecommunications technology, services and products to enhance

their operations. VTAC is also using its Web site, regional focus groups, the 12-site Vermont Interactive Television Network and other more traditional means to educate business owners in the use of telecommunications technologies.

Project funds were awarded by TIIAP in October 1998 and will sustain the project through September 2001. Champlain College's new \$7 million Information Commons houses VTAC as an in-kind contribution. Located at the Information Commons are the College's computer center, library, classrooms computers for its students, television broadcast interactive television and recording facilities, and other state-of-the-art, multi-media facilities.

A three-year study by the non-profit Vermont Business Roundtable discovered a wide gap between the telecommunications technology available and the level of understanding of how it can assist government, non-profit organizations, small businesses and individual entrepreneurs. VTAC is seeking to provide the education necessary to close that gap. It is helping businesses survive and grow by introducing them to, and assisting them in using, information technology.

VTAC is funded through a broad mix of public and private sector partners. It is the outgrowth of a joint effort by the State Public Service Board and Public Service Department, telecommunications providers and private and public users. The Board of Directors of VTAC includes representatives from the State of Vermont, telecommunications industry, Champlain College, and private businesses. For more information:

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Champlain College
Vermont Telecommunications
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Reprinted, with updated information, from the TIIAP Web site, Search Funded Projects, at <http://www.ntia.doc.gov/otiahome/tiiap/index.html>.

Mentoring Program in Southwest Iowa

In an effort to bridge the "digital divide," Corning, IA found a way to span the generation gap. As

part of a grant from the Kellogg Foundation, Managing Information With Rural America (MIRA), community leaders have instituted a mentoring program that pairs senior citizens with middle-school students for one-on-one sessions on topics such as e-mail and chat-room etiquette. The mentoring program also pairs high school students with businesses and even includes a program for elementary students.

Corning is one of 13 community teams in Adair, Adams, Montgomery, Page, Ringgold and Warren counties that joined forces with the Southwest Iowa Coalition to apply for a 1998 MIRA grant. The Grow Iowa Foundation, Inc. is the fiscal agent for administering the grant. The program is now entering its second year.

The MIRA grant was awarded in two phases, with the first phase funding community capacity building. Representatives from each of the 13 community teams attended workshops on asset mapping, building human and electronic networks, participatory decision making, managing community conflict, project planning and implementation, technology and other topics that would give them the skills to manage technology proposals within their communities. Following the first phase, each community submitted a proposal for community technology projects to a grant steering committee comprised of representatives from the community teams.

The second phase of the MIRA grant provided funding for the communities' individual proposals. The MIRA grant's main criterion was that the technology projects represent a grassroots initiative in the community. The steering committee developed additional criteria that encouraged projects to be sustainable beyond the initial MIRA funding.

The various proposals included training, creating community Web pages, developing community technology centers and conducting a feasibility study for a municipally owned communications utility. The key to success has been the involvement of private citizens. Their energy, along with support from public agencies, has resulted in creative ways to foster full participation in the information age. For more information:

Lana Pals
Grow Iowa Foundation, Inc.
Phone: 515-345-2281
E-mail: ljpals@netins.net

Blacksburg Electronic Village Facilitates Development

The small town of Blacksburg, VA is proving that the Internet can have a tremendous impact on community development. Following the development of a network called the "Electronic Village"—a joint initiative between the town, Virginia Polytechnic Institute and State University

and the Bell Atlantic Corporation—the town has experienced a flurry of escalated economic activity.

Nearly 20 Internet-related businesses have popped up, and more than two-thirds of the town's households have connected to the Internet. Further, most Blacksburg local businesses have a presence on the Web.

More than a catalyst for local business growth, the Electronic Village is also drawing new residents into the community. And as the online network is proving to be the lifeblood of the community, housing that provides high-speed connections are in higher demand than those that do not. Apartment complexes, wired for speeds about 100 times faster than typical home-computer modems, have been in tremendous demand. In fact, requests for high speed Internet access are exceeding those for laundry facilities, luxury furnishings and cable TV. Today more than 75 percent of the citizens of Blacksburg are wired to the Internet.

What originally began as an effort to expand Internet access to Virginia Tech faculty and students living off-campus has developed into a revolutionary new tool for economic and community growth. Today, the E-Village serves as a continuously updated directory for businesses, services, government, events, local news and weather. For more information:

Blacksburg Electronic Village

Phone: 540-231-4786

E-mail: bev.info@bev.net

URL: <http://www.bev.net>

Smart Centers Help Distressed Black Hills

Northern Hills Community Development, Inc. is coordinating the Telecommunications Solutions for Rural Revitalization (TSRR) Project, establishing four community-based "smart" centers to address business, health, education and cultural needs.

The smart centers are using information technology to facilitate business planning, including recruiting, incubation, consulting, development and training. These strategically located hubs of telecommunications-rich capabilities are linked to each other as well as to resources across the globe. Grant funds were awarded by TIIAP in October 1998 and will sustain the project through September 2000.

The project is addressing the serious economic crisis currently facing communities in the Black Hills of South Dakota. Using the resources of the smart centers, local entrepreneurs are able to establish new businesses that broaden employment opportunities in the Northern Hills. In

In addition to building the centers, TSRR is conducting strategic planning, in conjunction with telecommunications and information technology providers, to ensure on-going development of infrastructure capacity in the area.

The smart centers are giving businesses, entrepreneurs and citizens access to the latest technological tools, while addressing the current economic crisis. In addition, Northern Hills Community Development is providing funds to plan for developing information infrastructure—a key to the area becoming economically viable in the face of continued job losses in the mining industry.

Northern Hills Community Development is partnering with the communities of Belle Fourche, Central City, Deadwood, Lead, Newell, Rapid City, Spearfish, Sturgis and Whitewood; Technology and Innovations in Education; Small Business Administration; US West; and Black Hills FiberCom. For more information, contact:

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Reprinted, with updated information, from the TIIAP Web site, Search Funded Projects, at <http://www.ntia.doc.gov/otiahome/tiiap/index.html>.

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Attracting High-Speed Telecommunications

When calling a toll-free number for the super-store Best Buy, customers speak to a representative in Montana, a state that doesn't have a single Best Buy retail outlet. It does, however, have a call center that processes nationwide service calls. In 1998, the Great Falls facility opened to take advantage of low operating costs and the quality of life that comes from being located less than an hour from the Rocky Mountain front.

Numerous small towns offer these same amenities. Unfortunately, not all small communities have secured the necessary telecommunications infrastructure to support such potentially lucrative business opportunities. In fact, many small and rural communities lack speedy, affordable access to the information and e-mail connections available over data networks.

In today's fast-paced world, in addition to roads, water, sewer, utilities and other conventional public-sector infrastructure needed by businesses, thriving firms need affordable, high-speed Internet access. It is becoming increasingly common for businesses to demand broadband services—networks capable of carrying multiple channels of switched, interactive, multi-media communications, including voice, data and video. Without high-speed, broadband telecommunications, small communities cannot compete in creating, retaining and attracting sources of economic development.

In Rural Areas, Lack of Market Demand

The Telecommunications Act of 1996 was intended to promote competition that would in turn lower prices and improve services. However, as many rural analysts have argued, competition among service providers is not coming quickly to rural areas.

Long distances from cities and low population densities delay deployment of advanced telecommunications to many rural communities. Telecommunications providers prefer urban areas, where fixed costs are spread over more customers and volume is greater.

In some rural areas, even the basic infrastructure for high-speed telecommunications investments does not exist. On top of incurring long distance charges for routine calls—because of geographically small local calling areas—many rural customers may not have access to the minimally acceptable basic local services. According to Edwin Parker, telecommunications consultant and co-author of *Electronic Byways*, many rural residents lack single-party, touch-tone service with digital switching, and line quality adequate for voice, data and fax transmission at 28,800 bits per second.

Other communities have only dial-up Internet access that greatly hampers the speed and ease of telecommunications. William Kennard, chair of the Federal Communications Commission

(FCC), explains the deficiencies of dial-up access in a recent interview with *Government Technology* magazine:

The Internet backbone is a network of networks that has plenty of capacity to pump data all over the country very quickly. But when it reaches that last mile, the copper phone line (used for dial-up access) is a lot like a garden hose. Imagine trying to fill a backyard swimming pool with a garden hose. The hose—and the copper phone line—are just too small. A regular phone line just can't handle the amount of data that needs to be pumped through it to fill up your computer screen quickly.

Because it is harder to attract providers to rural areas, rural residents who want affordable high-speed, broadband telecommunications services must be more pro-active than their urban counterparts to attract new investments. Strategic planning can help achieve this goal by evaluating the local market, community leadership, existing opportunities, and potential technology applications.

Strategic Planning: An Effective Response

Strategic planning helps communities identify which strategies offer the most potential to address local telecommunications needs. Strategic planning for telecommunications can help communities to:

- identify gaps in existing telecommunications infrastructure by pinpointing problems that limit economic development, service delivery or quality of life;
- help people decide which problems are most important to address first;
- create opportunities for partnerships by identifying common interests;
- build more broad-based support for new telecommunications applications; and finally,
- provide a mechanism to coordinate multiple strategies.

A complete strategic-planning process for telecommunications is comprised of three parts: a needs assessment, goal setting to address the most critical issues and crafting an appropriate action plan.

Assessing Needs

Through a needs assessment, community leaders can gather and analyze information about the local telecommunications environment from both a demand and supply perspective (see *Elements of a Telecommunications Needs Assessment*, Page 56). It documents:

- existing telecommunications infrastructure and services (see *Basic Telecommunications Infrastructure*, Page 57);
- business, public agency and household use of (and satisfaction with) existing infrastructure and services;
- potential demand for expanded infrastructure and service; and
- financial resources and potential partnerships for implementing strategies to address telecommunications needs.

The information-gathering process leads communities to identify trends, make reasonable projections, and evaluate the feasibility of specific alternatives.

Identifying Goals

The second step in the strategic-planning process is to identify top-priority goals based on the findings of the needs assessment. Prioritizing goals gives citizens a common destination and articulates the direction they want to go in addressing technology issues.

To be successful, the goals must be based on broad community input and reflect the community's consensus about needed action. Establishing these goals is essential in building a business case for future telecommunication investments. Concrete goals show that the community is focused on its priorities, that there is a coordinated effort to work towards a common end, and that progress will be measurable.

Developing an Action Plan

Once community goals have been identified, the third step in the process is to develop an action plan for implementing them. An effective plan identifies specific strategies, funding resources, organizational issues, staffing needs and a general timeframe for implementation. The action plan should contain strategies that complement one another and offer a realistic framework for accomplishing top-priority goals.

Moving through the steps of the action plan is a measure of progress towards the community's overall telecommunication goals. Like the first two stages in strategic planning, this one should be evaluated and adjusted to reflect changes in the local telecommunications environment.

Action Plan Strategies. Action plan strategies fall into two general categories. The first involves efforts to attract outside investment. For example, "demand aggregation" combines the buying power of local telecommunications users to build a business case to attract other investors. Another possibility is to find an "anchor tenant" or single telecommunications user that generates a large enough volume of business to justify a provider's cost of upgrading infrastructure. Planners also can cultivate demand for telecommunications through local training opportunities, public-access terminals and demonstrations. The more people know what technology can do for them, the more service and capacity they will want—and the more lucrative the market for potential investors.

The second category of action plan strategies involves bringing local public and private resources together to invest in meeting one particular need, for example, health care providers. These strategies rely on investment from the community through public-private partnerships to build networks. The networks are limited in scope and generally have a defined set of users such as hospitals in a telemedicine network or schools in a distance learning network. While these networks bring valuable services to the community, they may not link to one another and usually are not available to the general business community. Building these networks may, however, provide the critical mass necessary to attract additional investment from the telecommunication provider.

Strategic Planning Guidelines

Strategic planning for telecommunications can be a time-consuming process, even in small towns. Communities that undertake such an effort should allow three to six months to complete the process, depending on the level and method of public input. Dividing the strategic plan into phases or smaller tasks may allow the community to contract out for the more technical services while completing some work in-house.

A step-by-step approach also allows the community to select a contractor with specific expertise for that particular phase of the project. An engineering firm, for example, would be an excellent choice for system design but may not have the expertise that is necessary to assess the market or facilitate a consensus-building.

If a survey is used for gathering information during the needs assessment phase, it will take several months to design the questionnaire, select a sample, administer the survey and

evaluate the results. Obtaining information through focus groups or public meetings can be done more quickly but does not offer the comprehensive information about telecommunications use that can be obtained by conducting a representative sample survey.

It is best if the needs assessment includes a survey of households as well as the more obvious and larger telecommunications users, such as businesses and public agencies. Incorporating households into the needs assessment is important for two reasons. First, home-based businesses that rely on telecommunications need reliable and affordable broadband access to the Internet. They tend to be higher income and offer good economic-development potential. Only by including a household component in the needs assessment can this source of demand be measured.

Second, by involving households in the needs-assessment process, it is easier to build broad-based support for improved telecommunications. Especially in small towns where resources are scarce, strategic planning processes need to draw on as broad a segment of the community as possible.

Assembling Data

Gathering data about the existing telecommunications infrastructure is another time-consuming task. Most of the information already may be published in other sources, but it takes time to find and analyze the data. Often the available information is incomplete and needs to be supplemented with interviews and additional research. One of the best sources of information on telecommunication infrastructure is the state public service regulatory agency. Many states also have an office of technology or information management that maintains data about state networks.

Local telecommunications providers can provide information about the location of central offices, switching features, trunk lines and service costs. Sometimes this information is available from company Web sites, but because these are private corporations, much information is considered proprietary and may require great persistence to obtain. National agencies such as the Federal Communications Commission (FCC), National Telecommunication Infrastructure Administration, National Exchange Carrier Association (NECA) and National Telephone Cooperative Association provide information on industry trends and issues.

When it comes to identifying strategies that are well suited to the local situation, several criteria should be considered:

- Can the project be sustained beyond the start-up phase?

- Does it have the potential to serve the most people or create the most jobs relative to the amount of resources required?
- Can the project leverage funds from multiple sources through partnerships?

The success of a planning effort depends on the commitment of public officials to follow through with the plan's recommendations. If the process is too long, staff and elected officials may not be able to maintain the necessary time commitment. Sometimes, a single dedicated individual or champion can provide the perseverance to move a project forward. Buy-in from the entire community is always necessary if public funds are to be invested in the project. The most effective strategic-planning process builds broad public support by involving multiple stakeholders, increasing community awareness and reflecting the needs of the entire community.

Attracting Telecommunications: Case Studies

The state highway is in good shape, the sewer system has been extended and the local school has been renovated. The community is on the upswing—except that it needs affordable, high-speed Internet access to attract businesses and accommodate the technology needs of existing firms. Several states and many small towns have taken on the challenge, with a host of success stories to show for their efforts. Read on for inspiration and ideas.

Colorado Legislature Improves Telecommunications Infrastructure

Equitable economic opportunity for all citizens of Colorado depends on each region having access to advanced telecommunications infrastructure. To stimulate private investment where improvement is needed, the public sector's purchasing power can be used. The 1999 Colorado General Assembly passed two initiatives to do just this: the Multiuse Network and HB99-1102 (the "Beanpole Bill"). With the public sector customer acting as "anchor tenant," other customers—homes and businesses—then will benefit from improved telecommunications facilities.

The Multiuse Network (MNT) is designed to pool the purchasing power of the state's \$13 million "phone bill." Currently, the state's traffic is not aggregated, resulting in, for example, 36 telephone lines going into the city of Alamosa. When these 36 lines—and their counterparts throughout the state—are procured in bulk, the state not only will save money, but also will be able to require advanced services capable of simultaneously carrying voice, data and video. And since these services will be leased from private providers, they will be available to the community at large. By fall 1999, the Division of Telecommunications will issue an RFP for the

MNT. The initial appropriation of an additional \$13.5 million in capital construction funds has been made for putting the necessary network terminating equipment in state offices.

HB99-1102 extends the geographical reach of the MNT to the local level to include all public facilities (schools, colleges, libraries, and health care, municipal and county facilities), not just state agency offices. The bill, sponsored by State Rep. Brad Young (R) Lamar provides matching funds to communities as an incentive to pool their demand. Each self-defined community will issue its own RFP to private providers to connect these facilities to the nearest point of presence of the MNT. Communities then will apply to the state for funding to cover part of the overall cost. Local match will vary depending on need.

The bill charges the Colorado Department of Local Affairs with program administration responsibilities. While cost estimates project a need of \$30 million in capital construction funds over three years, the legislature approved \$4.5 million in pilot funding for the coming year to test the concept. The legislature required that a report be made on April 1, 2000.

The two initiatives work hand-in-hand. The MNT provides a statewide backbone that provides a place for the communities to "plug into," while the Beanpole Bill provides additional traffic on the MNT. Together they render a significant stimulus to private investment in telecommunications where it is needed. The result will be a more equitable distribution of economic opportunity to all Colorado citizens. For more information:

Clayton Powers or Mike Borrego
Multiuse Network (MNT)
Phone: 303-866-2444 or 303-866-2341
URL: <http://www.ruraltelecon.org/cif.htm>
Or for information on HB99-1102:
Jeff Richardson, jefr@cati.org.

Berkshire Connect: Public and Private Partners Share the Risk

Berkshire Connect, an economic and community-development initiative begun in 1997, is charged with creating a world-class telecommunications system for Berkshire County, MA. Berkshire County, located in the western end of the state, lacks access to the same affordable, high-speed telecommunications capabilities available in Boston and other cities to the east. Compared to most of Massachusetts, the Berkshire population is sparse and lacks sufficient demand to entice telecommunications providers to make major investments. Lack of access to advanced telecommunications has put the area at a competitive disadvantage.

To examine its telecommunications alternatives, Berkshire Connect formulated and adopted an

"Assessments and Recommendations Report" in September 1998. The report's underlying premise was to "redefine the economics of the rate of return." For the Berkshire Connect task force, this meant exploring technology options that would distribute the risk of investment among public and private partners.

With information from user surveys and preliminary cost data, the task force identified three infrastructure alternatives that ranged from leasing a high-speed line to building a private fiber-optic network. The report also discussed complementary strategies to stimulate demand for high-speed networks and possibly form a cooperative to act as the legal entity in providing advanced telecommunications services.

Currently, the state grant that underwrote the assessment report is funding an engineering study to furnish more specific details on design, costs and markets for each of the options. The results of this study, expected to be completed by spring 1999, will help the county determine optimal telecommunications investments for the area.

The Massachusetts Technology Collaborative, a state agency, conducted the study while the Berkshire Regional Planning Commission provides the staffing for Berkshire Connect. The process has become a model for other initiatives within the state and across the country. For more information:

Nathaniel W. Karns
Berkshire Regional Planning Commission
Phone: 413-442-1521
E-mail: Nat_Karns@mma.org
URL: <http://www.bconnect.org>

Norfolk, Nebraska: Aggregating Demand

Rural telecommunications, says Mike Nolan, city manager of Norfolk, NE, is "where the information highway meets the dirt road." Norfolk, a town of just over 20,000 in northeast Nebraska, has been engaged in several successful efforts to bring the benefits of the information age to its corner of the state.

In 1998, a \$5-million, state-of-the-art Lifelong Learning Center opened in Norfolk. The center, which offers interactive video, eventually will be linked to more than 50 sites throughout the state. It was built with a combination of revenue bonds and private contributions, including \$1 million from Johnny Carson, a Norfolk native. Five educational partners are the center's primary users, but training for private business is also a major focus.

Lifelong Learning Center became a community priority through several visioning processes. Because the community viewed advanced telecommunications as vital to its health, it pushed to make affordable high-speed services accessible to all businesses and residents. Today, the city government is working with the hospital, banks and other telecommunications users to combine, or aggregate, local demand, enabling US West to upgrade the switch for high-speed ADSL technology at a reasonable price. (ADSL is an acronym for Asymmetric Digital Subscriber Line. ADSL converts existing copper phone lines to three information channels, including a high-speed data channel. Depending upon the particular hardware configuration, ADSL can offer speeds of up to 7 megabits per second.)

Part of the strategy to aggregate demand includes building a fiber-optic network that will link all city facilities. Although state regulatory barriers prevent the city from entering the telecommunications market as a service provider, Norfolk can sell excess capacity on the fiber network to other community users. The approach will help fund improvements and boost the volume of data over the city network to attract additional US West investment.

When considering advanced telecommunications strategies, Nolan stresses, a community should never get locked into any single approach. Community leaders, he maintains, should be open to new opportunities and, if necessary, create their own opportunities. For more information:

Mike Nolan
City of Norfolk
Phone: 402-644-8720
E-mail: cadmin@ci.norfolk.ne.us
URL: <http://www.ci.norfolk.ne.us>

Northeast Wyoming Economic Development Coalition: Strategic Planning Spurs Action

In 1997, Douglas, WY, dubbed one of America's best small towns by McMillan publishing, participated in a five-county telecommunications planning study. Spearheaded by the Northeast Economic Development Coalition (NEWEDC), the study recognized that local leaders lacked sufficient information to make thoughtful decisions about technology investments. Due to inadequate coordination among major institutions, the area was passing up opportunities to improve services.

Study results showed that large telecommunications users—coal companies, hospitals and schools—had the potential to coordinate demand and attract better telecommunications services. Existing, underutilized networks offered the possibility for leasing excess capacity. Meanwhile, planned service upgrades offered community officials an opportunity to negotiate

for high-speed services.

A major recommendation of the study was to stimulate local demand through training, mentoring, computer recycling and financing of computer purchases. The plan also advocated increasing awareness among public officials to help build support for telecommunications investments. To manage excessive improvement, the report suggested such strategies as partnering, phasing in projects, leveraging outside funds and optimizing existing capacity.

Since NEWEDC adopted its strategic plan in February 1998, leaders have met with Sprint Communications to discuss establishing a point-of-presence (POP) within the study area, a process that would involve installing switching equipment from the long-distance provider at the US West central office in Gillette. Powder River Energy also is investigating the feasibility of offering telecommunications services in two of the more sparsely populated counties.

Additionally, the regional cable company, CommuniComm Services, has wired Douglas with fiber optics and is in the process of deploying cable modems. The town's economic-development agency also is planning a technology- training center that will offer virtual-reality technology to train workers for area companies.

The regional telecommunications plan was the central catalyst for all of these actions. It provided leaders with information for negotiations and focused efforts on areawide priorities. For more information:

Susan Bigelow
NEWEDC
Phone: 800-376-0848
E-mail: ccedc@vcn.com

Rural Electric Co-ops: For Some Rural Areas, the New Vendor of Choice

In the last few years, rural electric cooperatives (co-ops) have joined the revolution in consumer communications by offering local and long-distance telephone pagers, cellular phones and Internet service. The revolution started with the 1998 Telecommunications Reform Act, which specifically encouraged electric co-ops to get involved in various forms of telecommunications.

As of May 1999, 33 electric co-ops offer long-distance or local telephone service, 43 offer cellular phone service and 134 provide Internet access, according to Brenda Ullman, project manager of Power On-Line, a diversification reference tool available through the Web page of the Rural Electric Management Development Council, a task force of the National Rural Electric Cooperative Association (NRECA, the national service organization of nearly 1,000 electric co-

ops in 46 states).

The same survey found that 81 other co-ops plan to provide phone service in the future. An additional 61 are considering entering the cellular phone business. Another 134 hope to offer Internet access.

In some rural parts of the country, the consumer telecommunications field is wide open. "Co-ops are in place to become the vendor of choice in the rural areas," says Barry Scott, communications manager of Sulphur Springs Valley Electric Co-op in Willcox, AZ. "That's where the growth is; that's where things are hopping and popping."

Electric co-ops are acutely aware of the need for better services. "That's always been the philosophy of rural electricians: to allow rural folks to have access to the same services as others," says Scott. "In a lot of small towns, the phone companies haven't invested a dime in the local community or the phone service in 20 years," adds Stephen Brevig, general manager of Northwest Iowa Power Co-op, a generation and transmission electric co-op making huge investments in fiber-optic infrastructure throughout Iowa and surrounding states.

Some co-op managers envision sending out a bill each month that covers electricity, gas, Internet access, phone service and satellite television, all sold by the co-op. "We want to provide all the communications and feel-good services there are," says Terry Clark, vice president of energy services for Snapping Shoals EMC in Covington, GA.

Excerpted from *Rural Electrification Magazine* (May 1999), NRECA's monthly publication. For more information:

NRECA
Phone: 703-907-5500
URL: <http://www.nreca.org>

Longmont, Colorado: A Catalyst for Advanced Telecom Services

Longmont, CO, a small community 30 miles north of Denver, has an annual growth rate of 5 to 6 percent and is home to high-tech firms that manufacture computer interface and pharmaceutical products. One would expect these companies to have state of the art telecommunication services. Yet Longmont is one of the handful of central offices in Colorado still working with an analog switch.

The switch already is operating at near capacity. The local phone company is finding it difficult to accommodate new users, and there are lengthy delays for even routine service orders for

phone hook-up.

Because of these limitations, high-speed services such as frame relay or ISDN are either not available or cost prohibitive for many businesses. (Frame relay technology transmits data extremely quickly, in the range of 64 kbps to 1.544 kbps.) In response to demand for better services, Longmont expanded its electric utility to include a fiber-optic communication network. In 1997, the city installed a 17-mile, 144-fiber backbone ring linking local government buildings. The network now carries voice and data between city facilities and has excess fiber capacity that can be leased to private companies.

Public officials also are seeking to partner with a telecommunications provider that would connect the system to the public switched network and offer advanced communications services to the entire community. Longmont has been in negotiations for such an agreement with several companies, but a deal has not yet been reached. "Part of the difficulty," says Bill Ewer, an official with the Longmont Power and Communications Department, "has been continuing change in the industry that has resulted in frequent mergers and acquisitions. As companies change hands or acquire new assets, their strategy and priorities also change."

Longmont's fiber network is especially attractive to potential investors because it is part of a larger regional network that includes the cities of Loveland, Fort Collins, Longmont and Estes Park.

The network is jointly owned by the four cities and the Platte River Power Authority, a power generation and transmission company. Platte River installed the fiber to replace an aging microwave communications system that was used to monitor and control the power transmission and distribution. Through its alliance with Platte River and a potential telecommunications partner, the city of Longmont hopes to be the catalyst for meeting the communication needs of the community. For more information:

Bill Ewer
Longmont Power & Communications
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E-mail: bill.ewer@ci.longmont.co.us
URL: <http://www.ci.longmont.co.us>

Cayuga County, New York: Feeling the Need for Speed

Cayuga County in western New York State is embarking on its second telecommunications planning process in three years. It wasn't rapid technological change that necessitated the update, however. The plan became outdated, explains County Planner Steve Johnson,

"because we met all our goals."

In 1994, a county resolution created the Telecommunications Consortium. Officials began meeting to discuss telecommunications issues, and in 1996 they teamed with Cornell University's Local Government Program to prepare a strategic plan. The collaboration resulted in funding for a full-time staff position and the creation of CayugaNet, a community network that puts local government and nonprofit information on line. CayugaNet's philosophy is not to compete with commercial providers, but to lend a supportive hand in getting businesses online by training small businesses on Web design and electronic commerce.

The top priority of the telecommunications plan, however, was the acquisition of local dial-up access to the Internet. As a result, Cayuga County currently has local Internet access at speeds comparable to the best big cities have to offer. Planning activities influenced the regional cable company to upgrade its system and offer cable modems throughout the county. Last year, this high-speed access, along with an extensive countywide geographic information system (GIS), convinced NASA to locate a regional application center at the community college.

The county also is a finalist for a microchip plant in search of a New York location. Especially attractive to the company was the online information CayugaNet presented in its bid package.

A key to Cayuga County's success has been the ongoing dedication of public officials. The consortium spent time initially becoming informed about the issues and remained active after the initial planning stage. Consortium members continue to seek grants for various projects and were successful in winning an award that helped fund public access to the county GIS system. For more information:

Steve Johnson
Cayuga County Planning Department
Phone: 315-253-1205
E-mail: webmaster@co.cayuga.ny.us
URL: <http://www.cayuganet.org>

Northern Valley Communications: A Marriage of Phone and Electricity

When US West failed to meet customer need for high-speed telecommunications services in Aberdeen, SD, Northern Electric Cooperative joined forces with James Valley Telephone Company to fill the gap. In May 1998, the South Dakota Public Utility Commission (PUC) granted the necessary approvals for Northern Valley Communications (NVC) to become a competitive local exchange carrier (CLEC) and compete in US West's South Dakota territory.

Today, access to broadband technology is meeting the needs of Aberdeen-area users. It also is spurring economic development and building a healthy customer base for the rural electric cooperative. Initially, NVC formed to provide basic Internet services only. But with the rapid growth in subscribers, NVC conducted a market study in the Aberdeen and Redfield exchanges and determined that there was sufficient demand for more advanced technology.

NVC eventually intends to provide local and long-distance telephone service, as well as advanced voice, data and telecommunications services. To bring this technology to Aberdeen, NVC is building a fiber-optic loop that will carry data to the company's switch in Groton, SD. The switch will be upgraded for ADSL and was expected to be in service by March 1999. Major customers of the new services include two industrial parks, a mall, a 3M plant and a Super 8 Reservations Center.

NVC also is investing in Aberdeen's first "smart park," an industrial park wired for high-speed telecommunications. The site has the potential to attract high-tech businesses and adds another technology dimension to the region's economic-development strategy. For more information:

Doug Eidahl
Northern Valley Communications
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E-mail: doug@nvc.net

Hawarden, Iowa: Taking Over Cable Communications

Hawarden, IA is pursuing an unusual and competitive telecommunications strategy. For years, the city's residents and businesses have been frustrated by unreliable service and expensive rates from the region's telephone and cable providers. Since service upgrades appeared to be a low priority for local providers, the city decided to step in. In 1994, Hawarden's voters overwhelmingly approved a referendum to create a municipally owned cable/communications utility.

As part of an upgrade to the existing electric utility, Hawarden was able to obtain a \$4.5-million revenue bond to build a hybrid fiber/coax network throughout the city. The network was completed in 1997, and in October of that year, the city began competing with Tele-Communications Inc. (TCI) to provide cable services. The immediate results were reduced rates and expanded services from TCI, a huge cable company.

The city also had planned to use the network to compete as a local and long-distance provider,

but legal challenges quickly forestalled advances when the Iowa Telecommunication Association challenged the authority of a municipality to operate as a communication utility. The District Court ruled in favor of Hawarden, and on October 20, 1998, the municipality commenced its phone service. One day later, the Iowa Supreme Court overruled the District Court decision and forced the city to shut down all telephone operations.

Despite the obstacles, the vision is still alive. On February 17, 1999 the Iowa Supreme Court reheard the case and ruled in favor of Hawarden. The latest decision means that the city can resume providing local and long-distance service, as well as high-speed cable modem access.

High-speed telecommunication services are critical to local businesses such as Coil Craft, a producer of parts for cellular phones that ships to clients all over the world. The business's current practice of leasing a T-1 line to the parent company in Chicago has been prohibitively expensive. Far more affordable would be cable-modem access through the city's telecommunications network. If reasonably priced, high-speed access is not made available soon, Coil Craft may be forced to relocate. For a small town like Hawarden, the loss of Coil Craft's 250 jobs would be extremely significant. For more information:

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Portions of this chapter appeared as an article in *Rural Development Perspective*, a publication of the U.S. Department of Agriculture, Volume 14, Number 3. The article was co-authored by Kathleen McMahon and Priscilla Salant.

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Priscilla Salant is an adjunct faculty member in the Department of Agricultural Economics at Washington State University, Pullman. She recently completed a study of how rural newcomers use communications technologies to earn their living and also conducted a preliminary telecom needs assessment for a rural county in Washington state. Salant can be reached by e-mail at salant@wsu.edu.

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Web Sites of Interest

Presented below is a listing of Web sites of possible interest to small town leaders. The list includes sites of government agencies, information clearinghouses, non-profit organizations and associations, as well as sites of general interest.

Since most Web addresses have a limited shelf-life, be prepared for error messages when entering some of these URLs. When entering a long URL, such as <http://www.hud.gov/progdesc/cpdindx.html>, you may get a message that the site cannot be found. Assuming that you have not mistyped the address, it is likely that the page no longer exists or has been moved. If this happens, try backing up, by removing portions of the URL from right to left. For example, you might try <http://www.hud.gov/progdesc> (which is useless in the case of this particular example) or even <http://www.hud.gov> (the HUD Home page). Then use the site's headings, buttons, site map or search tool to find the specific information you are looking for.

An alternative is to go to a search engine (as explained in Chapter 2) and enter the information you are looking for as a phrase, in quotation marks, specifying upper and lower case letters. For example, type "Community Development Block Grant Program" to locate information about the U.S. Housing and Urban Development community and economic development funding program.

If all else fails, wait a few minutes (or hours) and try again. The URL that produces nothing but error messages on Monday morning may connect perfectly by afternoon.

Local and State Government Sites

Official City Sites

Links to official Home pages of cities, counties, state and foreign countries.

<http://www.officialcitysites.com>

State and Local Governments on the Net

Links to Web sites sponsored and maintained by local governments.

<http://www.piperinfo.com>

State Web Locator

One-stop shopping point for state government information.

<http://www.infoctr.edu/swl>

NASIRE State Search

Topical clearinghouse to state government information, provided by the National Association of State Information Resource Executives.

<http://www.nasire.org/Statesearch>

Federal Directory Sites

Federal Web Locator

Comprehensive searchable database of Federal government agencies.

<http://www.infoctr.edu/fwl>

U.S. State and Local Gateway

Directory of Federal information geared to local and state government officials.

<http://www.statelocal.gov>

U.S. Non-Profit Gateway

Directory of Federal information geared to non-profit organizations.

<http://www.nonprofit.gov>

Rural Development Internet Resources

Directory of Federal information related to rural development.

http://www.rurdev.usda.gov/other_sites.html

Government Information Xchange

Federal telephone directories and yellow pages of Federal government agencies and services.

<http://www.info.gov>

Thomas

Comprehensive database of Congressional bills.

<http://thomas.loc.gov>

Library of Congress

Database of Federal government resources. U.S. Legislative Branch Page links to e-mail addresses for all Members of Congress.

<http://lcweb.loc.gov/global/explore.html>

Catalog of Federal Domestic Assistance

Government-wide compendium of Federal programs, projects, services, and activities.

<http://www.gsa.gov/fdac>

Specific Federal Sites

Access America Online Magazine

Electronic magazine covering federal, state, local and inter-government Web sites and telecommunication initiatives.

<http://www.accessamerica.gov>

Americans Communicating Electronically

Federal government effort to make the Internet accessible to all Americans.

<http://www.sbaonline.sba.gov/ace>

Appalachian Regional Commission

<http://www.arc.gov/programs/progmain.htm>

U.S. Bureau of the Census, Cities and Places Population

<http://www.census.gov/population/www/estimates/cityplace.html>

U.S. Department of Housing and Urban Development (HUD), "Small Cities" Community Development Block Grant (CDBG) Program

<http://www.hud.gov/progdesc/cpdindx.html>

U.S. Department of Agriculture (USDA), Rural Development Programs

<http://www.rurdev.usda.gov>

USDA, Economic Research Service

<http://www.econ.ag.gov>

USDA, Rural Information Center

<http://www.nal.usda.gov/ric>

USDA, Rural Utility Service Water and Environmental Programs

<http://www.usda.gov/rus/water/info.htm>

U.S. Department of Commerce, Economic Development Administration

<http://www.doc.gov/eda/html/specinfo.htm>

U.S. Department of Commerce, National Telecommunications and Information Administration

<http://www.ntia.doc.gov>

U.S. Environmental Protection Agency (EPA), Office of Wastewater Management

<http://www.epa.gov/OWM>

EPA, Office of Ground Water and Drinking Water

<http://www.epa.gov/OGWDW>

U.S. Government, Electronic Commerce Policy

<http://www.ecommerce.gov>

U.S. Small Business Administration

<http://www.sba.gov>

Information Clearinghouse Sites

Access Local Government

Research site for sharing information among local government officials.

<http://www.algov.org>

Community Information Exchange, Community Development Online

Clearinghouse with information about affordable housing, economic development and community revitalization programs.

<http://www.comminfoexch.org>

Local Government Environmental Assistance Network (Lgean)

Extensive forum and clearinghouse of environmental information for local government leaders.

<http://www.lgean.org>

Kellogg Collection

Clearinghouse of rural community development resources.

<http://www.unl.edu/kellogg/index.html>

U.S. West Foundation, Widening Our World

Directory of Internet resources for businesses, schools, organizations and individuals.

<http://www.uswestwow.org>

Sites of Organizations and Associations

Alliance for Public Technology

<http://www.apt.org>

Alliance for Redesigning Government

<http://www.alliance.napawash.org>

American Farmland Trust

<http://www.farmland.org>

American Planning Association

<http://www.planning.org>

The Aspen Institute, Rural Economic Policy Program

<http://www.aspeninst.org/rural>

Association for Community Networking

<http://bcn.boulder.co.us/afcn>

Community Development Society

<http://comm-dev.org>

Corporation for Enterprise Development

<http://www.cfed.org>

Council of State Community Development Agencies

<http://www.coscda.org>

The Foundation C1enter

<http://fdncenter.org>

Governing Magazine

<http://www.governing.com>

Government Finance Officers Association

<http://www.gfoa.org>

Heartland Center for Leadership Development

<http://www.4w.com/heartland>

Innovations in American Government Grants, John F. Kennedy School of Government

<http://www.ksg.harvard.edu/innovations>

International City/County Management Association

<http://www.icma.org>

National Association of Counties

<http://www.naco.org>

National Association of Development Organizations

<http://www.nado.org>

National Association of Regional Councils

<http://www.narc.org>

National Association of Towns and Townships

<http://www.natat.org>

National Center for Small Communities

<http://www.natat.org/ncsc>

National Civic League

<http://www.ncl.org>

National Drinking Water Clearinghouse

http://www.estd.wvu.edu/ndwc/NDWC_homepage.html

National Governors' Association

<http://www.nga.org>

National League of Cities

<http://www.nlc.org>

National Rural Electric Cooperative Association

<http://www.nreca.org>

National Small Flows Clearinghouse (wastewater)

http://www.estd.wvu.edu/nsfc/nsfc_homepage.html

National Trust for Historic Preservation, National Main Street Center

<http://www.mainst.org>

National Volunteer Fire Council

<http://www.nvfc.org>

Public Technology Incorporated

<http://pti.nw.dc.us>

Rural Community Assistance Program

<http://www.rcap.org>

Sites of General Interest

Companies Online

Listings of most U.S. companies.

<http://www.infoplease.com>

eBay

Online auction site.

<http://www.ebay.com>

Expedia

Microsoft's travel planning site.

<http://www.expedia.com>

Hoovers Online

Directory of companies and corporations.

<http://www.hoovers.com>

Information Please Almanac

Access to selected almanacs, encyclopedias and dictionaries.

<http://www.infoplease.com>

Kelley Blue Book

Used car information.

<http://www.kbb.com>

MSN Sidewalk

Guide to entertainment and shopping in 75 U.S. cities.

<http://www.sidewalk.com>

RefDesk.Com

Online access to selected dictionaries, almanacs and encyclopedias.

<http://www.refdesk.com/toc.html>

Travelocity

Travel site associated with the industry's Sabre reservations system.

<http://www.travelocity.com>

Weather Channel

Update on current weather conditions.

<http://www.weather.com>

Yellow-Page.Net

Listing of more than 18 million businesses and individuals in the U.S. and Canada.

<http://www.yellow-page.net>

Online Internet Tutorials

Virginia Institute of Government WWW Tutor

<http://www.institute.virginia.edu/online>

Internet 101

<http://www2.famvid.com/i101/internet101.html>

Newbie.net Cyber Course

<http://www.newbie.net/CyberCourse>

PBS Understanding and Using the Internet

<http://www.pbs.org/uti>

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