

Illinois Broadband Deployment Council Subcommittee Reports



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Illinois Broadband Deployment Council 2008 Subcommittee Report Executive Summary

In November of 2007, Lt. Governor Pat Quinn challenged the Broadband Deployment Council to outline the steps Illinois must take to position itself as America's leading broadband state.

Shortly thereafter, three volunteer committees formed—one to explore policy, one for consumer demand, and one to focus on infrastructure. Each committee produced a report with recommendations aimed at improving the cost, speed and availability of broadband technology in Illinois.

Here is the abridged version of each group's concluding recommendations:

Consumer Demand subcommittee recommendations

1. EXPANDED INVENTORY OF BROADBAND BENEFITS. With universities, libraries, hospitals and business support, Illinois should publish a searchable, catalog of “killer” broadband applications from across the state.
2. EXPANDED INVENTORY OF BROADBAND COSTS. Compile comprehensive data on the availability and pricing of broadband services for business, education and other enterprise-level consumers.
3. TRAIN-THE-TRAINER PROGRAMS. Cultivate programs like WIU's MAPPING effort, the Minnesota-based Blandin Foundation's Get Broadband project, and periodic large-scale conferences, symposiums and colloquiums for community leaders to share strategies for exploiting the potential of broadband technology in every sector of the local economy.
4. STATE LEADERSHIP IN DIGITAL GOVERNMENT. Create more web-based tools (like Illinois workNet and online tax returns) to digitize wide-reaching government services.

Infrastructure subcommittee recommendations

1. EDUCATION. Establish an initiative to educate key state decision makers on the basic issues related to communications infrastructure. Develop materials, organize special forums, and stage demonstrations of advanced technologies.
2. GOVERNANCE. Give a single State of Illinois organizational entity specific responsibility for digital communications and infrastructure in particular. A single organization or group should coordinate State broadband infrastructure responsibilities. It could become a clearinghouse for revising the existing obsolete policies and practices and for educating stakeholder communities about key issues.
3. STANDARDS. Develop open, transparent, widely available (but non-mandatory) standards for implementing core infrastructure, including conduit and fiber, for state and privately funded projects.
4. PROCESS STREAMLINING. Make model communications/network infrastructure development processes available to key constituencies, including mayors, municipalities, IDOT, regional planners, etc.

5. REMOVING IMPEDIMENTS. Eliminate artificial and costly barriers to implementing communications/network infrastructure, like those requiring multiple processes from multiple entities for a single aspect of a new network. Create portals to assist with permitting procedures across governmental domains, State, county, municipality, unincorporated area, and others. Such a portal could make it possible to sketch a proposed fiber route on an area map and receive all the appropriate information required to undertake that fiber build.
6. PUBLIC/PRIVATE PARTNERSHIPS. As large scale infrastructure projects unfold, active participation of multiple public and private entities should be encouraged by the state.
7. PLANNING PERSPECTIVE. Find a role for the state in coordinating multiple public/private entities who would find it beneficial to form cooperative partnerships to undertake fiber builds in remote areas in Illinois.
8. PRIORITIZATION. Initiate a process to prioritize these recommendations.

Policy subcommittee recommendations

1. IMPLEMENT SB 766. Full and rapid implementation of SB 766 (Public Act 95-0684).
2. REFORM ILLINOIS TELECOMMUNICATIONS ACT. Form a select joint committee or blue ribbon commission to modernize and reform the existing Illinois Telecommunications Act, which has not been overhauled since 2001.
3. MODERNIZE CURRENT REGULATIONS. Modernize the existing Illinois Telecommunications Act, which has not been overhauled since 2001.
4. ADDRESS BARRIERS. Remove artificial barriers to network deployment and enhancement, including:
 - a. Adopt a law similar to Iowa Code 476.27 creating standards by which a telecommunications provider can deploy network equipment across a railroad.
 - b. Minimize the time, effort and expense for obtaining the necessary permits from multiple jurisdictions for network deployment.
 - c. Create a nondiscrimination policy regarding utility pole attachments so long as safety and technical standards are maintained.
5. PROVIDE INCENTIVES. Incent communications providers to extend and enhance networks similar to the policy adopted by Wisconsin (<http://www.legis.state.wi.us/2005/data/SB482hst.html>).
6. TAX RELIEF. Give tax relief to Internet connectivity users and providers. Increasing the tax burden works against innovation and dissuades use of products and services.

Consumer Demand Subcommittee Report

What can people in Illinois do with world-class broadband technology? How can broadband technology be exploited for maximum benefit for every part of the Illinois? This report aims to tackle these questions in the context of ten segments of the state economy, including:

1. Health Care
2. Education
3. Public Safety
4. Residential
5. Business / Workforce and Economic Development
6. Agriculture
7. Transportation
8. Advanced Research
9. Community Services
10. Energy and the Environment

We will highlight standout examples of broadband technology in each of these categories. By explaining the practical possibilities of advanced communications infrastructure in plain English, we can dispense with the uncertainty felt by anyone still wondering why widespread, affordable, world-class broadband service is important to every community in Illinois.

Let's examine this question in each of the ten categories mentioned above. Every effort has been made to draw exclusively from Illinois examples, but you will notice in a few instances that case studies from out of state are highlighted.

Health Care: Four Standout Examples

Telepsychiatry

Telepsychiatry is a rapidly growing tool used by specialized psychiatrists to connect to people living in remote areas. Psychiatrists can interview patients by video conferencing, a technique involving use of fiber optics in the transmission of quality audio and video at rapid speed to both the patient and specialist simultaneously (http://archive.psych.org/edu/other_res/lib_archives/archives/199821.pdf).

Mercer County Hospital in Aledo works with the Robert Young Center for Community Mental Health in the Illinois Quad-Cities to provide telepsychiatry at the Aledo hospital's Medical Associates Clinic.

Since 2006, the Robert Young Center has allowed rural patients and those who cannot travel access to a full menu of psychiatric services. Clients accessing the services connect between a private office in Aledo, Illinois and a psychiatrist located at the Robert Young Center in Moline.

Under the arrangement board-certified psychiatrists provide assessments and medication evaluations directly for clients as well as consultative services to referring physicians or agencies. Referrals for the

service may be made by physicians, nursing homes, schools, human service agencies, law enforcement or self referrals.

Required data transfer rate: 128 kbps is required for both the audio and video of a medical session to be useful to a telepsychiatrist. 384 kbps are recommended for precision video that would allow the specialist to recognize symptoms of medical conditions by the patient's movements, such as mild tremors and reflexes.

Contacts: Tim Putnam, Mercer County Hospital CEO
Dr. David Deopere, Robert Young Center President
To schedule an appointment, call the center at 800.322.1431.

Trinity Regional Health Systems (Quad Cities) is offering a service that provides personal Web pages for patients to help family and friends communicate. (www.carepages.com/trinityqc). "Carepages" include a message board and photo gallery.

Benefits: Provides free, easy-to-use web pages that help patients communicate with loved ones. Family and friends can provide support and encouragement, and receive updates when someone is providing care. New patient updates are automatically sent via e-mail so that family members don't have to make repeated phone calls as a patient's condition changes.

Contact: 888.852.5521. Representatives available Monday - Friday, 8am - 6pm CST

Mailing Address:
CarePages, Inc.
4043 N. Ravenswood Ave
Suite 301
Chicago, IL 60613
866.981.4900

Telepharmacy

Many rural regions have suffered from shortages in pharmacists. In North Dakota, many pharmacies closed due to the lack of professional pharmacists in rural regions (<http://telepharmacy.ndsu.nodak.edu/>). Modern technological advancement has led to a new, innovative concept of a telepharmacy. Telepharmacies make use of audio-visual equipment to link pharmacists at a central location to registered pharmacy technicians in remote, rural areas. The pharmacist at the central site supervises the pharmacy technician preparing, labeling, and filling prescription medication at the rural pharmacy.

Benefits: Rural areas suffering from a shortage of pharmacists may rely on the telepharmacy to prevent further loss of pharmacies in rural regions. Money and time will be saved for rural residents, as long distance travel to pharmacies will be eliminated. Also, rural pharmacies will be supervised by highly-skilled pharmacists, reducing the number of errors in filled prescriptions. Although fully automated pharmacies are in the making, rural pharmacies would likely not have the revenue that automated technology would require.

Required data transfer rate: 512kbps — DSL quality or better. (<http://www.hrsa.gov/telehealth/grants/states/nd.htm>)

Contact: Ann Rathke – North Dakota Telepharmacy Project Coordinator
701.231.5863; Ann.Rathke@ndsu.edu

Digital Radiology

Chicago Department of Public Health (CDPH) is implementing Cerner's Radiology Information equipment, RadNet, and Cerner's Picture Archiving and Communication System (PACS). These technologies will be utilized at five facilities operated by CDPH.

Currently CDPH acquires radiology images via film. Radiology technologists develop them using photo development chemicals and send them via courier to the Radiologist Group to read and interpret the results. These results are sent back to the requesting health center and/or ordering physician.

Benefits: Digital radiology will permit same-day results for patients. This is particularly important for Mammography, TB and immuno-compromised patients. The PACS system will provide radiologists with a complete, easily accessible medical record to review prior reports and images for reference.

Same-day result reporting is made possible because the digital images can be transferred to radiologists almost immediately. Referring physicians also have access to digital images, which previously had to be hand delivered (one at a time) to each relevant medical professional.

Digital imaging eliminates processing delays and reduces emissions from the chemicals involved in the wet processing of film. It reduces the cost of film materials, transportation, and processing chemicals and storage. Importantly, eliminating film storage facilities expands available square footage for patient care.

Contact: Carlo Govia, Chicago Department of Public Health 312.747.9889

Education: Three Standout Examples

Illinois Virtual High School

In the 2007-2008 school term, the Illinois Virtual High School is offering 112 web-based classes with over 4,000 enrollment slots representing 144 high schools from around the state. The Spring 2008 term includes 1,888 students. Illinois certified, NCLB "highly qualified" teachers (most of whom work full-time in traditional classrooms) administer IVHS's online courses. Middle and high school students with access to an Internet-enabled computer can earn credit in classes ranging from remedial credit recovery classes to the most advanced college-level Advanced Placements (AP).

Benefits: IVHS is a state-supported resource that helps all Illinois students access equitable educational opportunities that would otherwise be out of reach due to where they live, scheduling constraints, or other socioeconomic barriers. To date, over 2,000 of the 13,000+ enrollments at IVHS have been for AP courses. Students who successfully complete AP courses and pass the corresponding AP exam can receive credit from most colleges and universities nationwide.

Required data transfer rate (bandwidth): IVHS courses accommodate students who have access to dial-up (56kbps) or faster. If broadband was available to every student, IVHS courses could be designed to incorporate more interactive, video- and audio-rich content.

Contact: Pete Knopf, Illinois Math and Science Academy (Aurora)

Education Using Broadband Technology

The Institute for Chemistry Literacy Through Computational Science (ICLCS) is a partnership funded through a \$5M grant by the National Science Foundation that includes the University of Illinois

at Urbana-Champaign Department of Chemistry, College of Medicine, the National Center for Supercomputing Applications, and K-12 schools around the state. This project provides training to 114 rural high school chemistry teachers using broadband technology. The program, which exists to strengthen rural high school chemistry programs and increase teachers' comfort with advanced math and graphics tools, includes a two-week summer institute and ongoing virtual training in curriculum that focuses on medicinal chemistry (biomedicine), nanotechnology, agricultural chemistry and molecular chemistry. Virtual presentations over the course of the year provide 340 hours of continuous professional development, mentoring, and support.

Benefits: This project exposes rural teachers to new models of instruction that can improve student achievement and prepare them for 21st century careers. The Institute builds teacher competence and confidence with new curriculum and methods, and creates a statewide community of colleagues working together to improve Illinois science education.

Required data transfer rate (bandwidth): T1 minimum in every participating school.

Contact: Diana Dummitt, UIUC College of Medicine (Champaign)

Illinois Century Network

Eastern Illinois University in Charleston has anywhere from 10,000 to 13,000 network users at any given moment, including about 5,000 students in the residence halls. The university is connected to the Internet through a local phone company and the Illinois Century Network, which helps provide affordable bandwidth to nonprofit entities such as schools, libraries, museums and governmental agencies. Students can download as much as they want.

Benefits: The student TV and radio department streams its audio broadcasts online. Students also have Web portals for online classes and grading, and the university library provides a large depository of digital content.

Required bandwidth: Its network is Ethernet-based with a 10-gigabit per second (Gbps) fiber backbone. Every dorm room has a 100-megabit per second (Mbps) LAN connection.

Other Examples: Online Professional Development for teachers (www.star-online.org) Real-time tutoring (http://www.skokiellibrary.info/s_kids/Live_Homework_Help/index.asp)

Public Safety: A Standout Example

Emergency Communications

In the wake of Minneapolis, Minnesota's tragic I-35 bridge collapse, wireless broadband technology helped maintain communication and information flowing during relief efforts.

“Immediately following the collapse, USI Wireless (the company that built and maintains the city network) opened up the subscription-based Wi-Fi service so anyone could use it free.

The network was used by local and federal officials [as] ... an alternate path for city personnel in the emergency command center to electronically exchange information, such as maps of the area, with personnel working in the field. Specifically, it allowed rescue

workers on the mobile command center that was floating in the river to communicate with various city, state and federal agencies during the rescue and salvage operation.

And it provided a network for the community to City of Minneapolis resources, hospital emergency coordination units, State of Minnesota Department of Transportation traffic routing information, Red Cross Blood Bank collection points, and local and national news outlets.

... three Wi-Fi-enabled cameras ... were set up along the river banks near the disaster site to provide a live video feed over the network directly to the command center.”

From http://www.usatoday.com/tech/products/cnet/2007-08-09-minneapolis-public-wifi_N.htm

Other Examples: Storm-ready communities may rely on online weather alerts (<http://www.stormready.noaa.gov/com-maps/il-com.htm>)

Residential: A Standout Example

Enhanced Communication for the Hearing Impaired

High-speed Internet service makes fast, natural, real-time telecommunication with the deaf possible. A broadband connection, a TV set and an easily obtained web camera (or Internet videophone) permit sign-language interpreters to translate conversations between deaf and hearing people in real time.

Benefits: This can help Illinois’ estimated 100,000+ deaf citizens and all of their non-deaf friends, family and colleagues. Access to basic telecommunication would improve the social, educational and employment prospects for anyone; for the deaf, who face disproportionately high levels of social, educational and employment challenges, it represents a monumental leap forward in these areas.

Required data transfer rate (bandwidth): 512 kilobits per second upload and download - minimum.

Contact: John Miller, Illinois Deaf & Hard of Hearing Commission (john.miller@illinois.gov)

Other Examples: Telecommuting/working from home (http://www.govtech.com/pcio/articles/265781?id=&story_pg=2)

Home-based online businesses (<http://stores.ebay.com/>)

Fiber-to-the-Home/Fiber-to-the-Premises in Salem, Paxton, Maryville, O’Fallon

Business/Workforce Development: Three Standout Examples

Web Site Enhancements for Small Businesses

Starting in 2006, the Verizon Foundation provided a grant to the Illinois Institute for Rural Affairs for a local initiative whereby small business, government agencies, schools and others in Stark County, worked with experts from the Institute to establish and maintain web sites for each of the businesses. With the Foundation’s support, new web sites give a worldwide audience to rural businesses, including John Leezer’s real estate agency (www.IllinoisFarms4Sale.com), State Bank of Speer (www.speerbank.com), and the Indian Creek Vineyard (www.indiancreekvineyard.com).

Benefits: Retaining local businesses and preserving a convenient shopping experience for small town consumers. Bringing global demand to Illinois business owners.

Contact: Gisele Hamm, Western Illinois University Illinois Institute for Rural Affairs (GF-Hamm@wiu.edu)

Making Small Businesses Competitive

A small town grocery store used to use dial-up for point-of-sale transactions, which meant an excruciatingly long wait for customers at a checkout trying to use credit cards. In a place where no other high-speed access was available, the Illinois Rural Electric Cooperative provided Internet to speed transactions to put the customer experience in a small town store on par with that of any city shopping experience.

Contact: Sean Middleton, Illinois Rural Electric Cooperative
217.742.3129; sean@e-co-op.com

Illinois workNet

Illinois workNet (www.illinoisworknet.com) is a portal for connecting employers and job seekers in Illinois. It was launched in June 2005 by the Governor's Illinois Workforce Investment Board (IWIB). The portal is a cooperative effort between state economic development, workforce development, education agencies, and local workforce investment boards along with their public and private partners including local governments, community colleges and non-profit organizations. It is designed to provide easy access to information and services through a network of public and private partners. As of August 2006, Illinois workNet was available in 37 counties and the City of Chicago. In these areas, public computer labs with trained staff offer access to the portal.

Contact: John Barr, Department of Commerce and Economic Opportunity (John.W.Barr@illinois.gov)

Voice Over Internet Protocol (VOIP)

Paxton Tru-Value Store currently uses high speed broadband for phone (VOIP), ordering inventory and as soon as is feasible, Scott Allen will be using the credit card processing. The only thing holding him back at this time is his cost of equipment for his use. Paxton as a community through the electrical cooperative offers "triple-play" throughout the town. The cooperative partnership also has wireless service available at an average of 1MgH of capability both up and down in the rural area.

Contact: Bruce Cooper, NOW Wireless (bwc@noww.us)

Other Examples: Community college videoconferencing (<http://www.swic.edu/distancelrn/interactivevideo/faq.jsp>)

RealBenefits (http://www.realbenefits/org/wv/index.php?base_id=55)

Agriculture: Three Standout Examples

Broadband and Agriculture

Robert Tammen of Tammen Seed Service in Danforth, Illinois uses broadband service to communicate with the various seed companies that he distributes. One company in particular (Golden Harvest) would

only allow him to use their product if he had high speed broadband access. His profitability depends in large part to his ability to access broadband.

Contact: Bruce Cooper, NOW Wireless; bwc@noww.us

Corporate Security

A company just outside of Pesotum, Illinois utilizes high speed wireless access to run surveillance on their property thereby lowering their cost of insurance. The service costs them \$9.95 monthly.

Contact: Bruce Cooper, NOW Wireless; bwc@noww.us

A major farm operation in Thomasboro, Illinois, utilizes broadband to communicate to the field operations, surveillance on their anhydrous tanks and out buildings, and to efficiently run their financial applications for their operation.

Contact: Bruce Cooper, NOW Wireless; bwc@noww.us

Other Examples: Ag-tourism (<http://www.agfun.com/>)

Rural Utilities Service broadband grants (<http://www.usda.gov/rus/telecom/highlights.htm>)

More Info: In August 2007 the US Department of Agriculture reported that Illinois has the eighth highest number of farms in the country with 72,400. Of all Illinois farmers, 55 percent reported using the Internet and of that group 46 percent relied on dial-up service to connect.

From <http://usda.mannlib.cornell.edu/MannUsda/viewDocumentInfo.do?documentID=1062>

“When most people think of networks they think of transferring files between computers or downloading web pages from the Internet. Networks can be used for much more than this. A network can be used on a farm for ... remote monitoring, information transfer, remote control, remote diagnosis, asset tracking, and voice communication. As modern farm sizes increase and labor shortages become more acute, farmers have to do more work over greater areas than ever before. Although constant monitoring and control of labor and assets (such as irrigation systems and pumps) is required, the spatially dispersed nature of those assets means that much time is wasted in transit. Significant managerial efficiency gains could be realized if these tasks could be carried out remotely. A decrease in the amount of labor required and an increase in productivity could result in real dollar benefits to farmers.”

From <http://www.farmnetworks.org/Information/AboutFarmNetworks/tabid/54/Default.aspx>

Transportation: Three Standout Examples

Traffic Control and Safety

Since the 1990's IDOT has used fiber optics to monitor and control major signalized intersections. Recent application of broadband technology has allowed IDOT to view real-time video of these locations and other high-accident locations along the state route and expressway systems.

Benefits: Traffic flow through intersections equipped with dynamic/remotely controlled traffic control devices provide for a much smoother movement flow thereby reducing potentials for vehicle-related

incidents, congestion and exhaust pollution. Observing high-accident locations in real-time allows for immediate dispatch of emergency response resources and faster site clean-up and restoration of traffic flow.

Contact: Mark Kinkade or Louie Midiri, Illinois Department of Transportation (Louis.Midiri@illinois.gov)

Securing Infrastructure

IDOT deploys and controls closed circuit security systems (cameras on a protected network) to detect activities that may threaten the State's highway transportation network, including bridges, overpasses, etc.

Benefits: Broadband technology allows IDOT, together with various law enforcement organizations, to protect and preserve the safety and continued availability of Illinois highway system for use by all law-abiding motorists. Major interruptions to this critical State infrastructure would severely affect not only daily transportation activities but much of the State's critical, transportation-dependent economic activity as well.

Contact: Mark Kinkade or Louie Midiri, Illinois Department of Transportation (Louis.Midiri@illinois.gov)

Other Examples: Wireless broadband on trains (<http://illinoisbroadbanddeployment.pbwiki.com/f/BroadbandProject.pdf>)

Advanced Research: A Standout Example

Illinois is a world leader in many advanced scientific and technology research areas, supported primarily by its universities and national laboratories. Major research projects in Illinois include those related to high energy physics, computational science, genomics, proteomics, systems biology, astrophysics, nanotechnology, materials science, photonics, optics, data mining, networking, computer science, and many others.

This research will be the foundation for future industrial and economic development in Illinois. Advanced communication services are essential to maintain this position. Traditionally, advanced scientific and technology research has been based on processes involving close interactions between theoretical development and investigative experimentation. Increasingly, these processes use digital tools for modeling and simulation requiring extremely large volumes of data and distributed computational processes.

Because science and technology research is a collaborative activity, high performance digital communications are required among highly distributed sites, state-wide, nationally and internationally. Required communication capabilities not only require bandwidth that is substantially higher than that used by consumers and business, but also specialized capabilities that allow research communities to directly control and configure underlying infrastructure resources, especially high quality fiber-based optical fiber based wavelength channels.

Currently, Illinois has world-class advanced communication services and infrastructure that support its scientific and technology research activities. However, capacity for future expansion is urgently required, especially additional direct access to multiple fiber based wavelength channels that can be closely integrated with research infrastructure, including scientific instruments.

Contact: Joe Mambretti, Northwestern University International Institute for Advanced Internet Research

Other Examples: Argonne National Laboratories (<http://www-news.uchicago.edu/releases/96/961017.materials.research.shtml>)

Community Services: Two Standout Examples

Community Technology Centers

Community Technology Centers (CTCs) are the entryway for training and educating underserved populations. They typically focus on users and offer after school homework and arts activities, workforce readiness, training for seniors and programs for those learning English as a Second Language. Robust broadband is needed to support their activities. Many CTCs function within human service agencies.

Benefits: High speed Internet in CTCs and in the homes of CTC patrons builds on CTC services as children do homework and parents participate in their children's education via e-mail contact with teachers. Participation in civil society, a reduction in isolation for seniors and people with disabilities, and the ability to use search tools to expand knowledge for both adults and children. Increasing 'work from home' opportunities would be a further benefit as would, for instance, enabling contact between foster parents and the agencies that they work with and facilitating foster children's contact with siblings.

Social Services

In the future, other human service agencies will use broadband for activities such as senior well-being checks, with one e-mail to a group of clients triggering daily responses or regular contact with 'Meals on Wheels' clients to check on food needs or surpluses, and indications as to whether they've actually eaten and whether they've thrown out any garbage. Another agency will use broadband to enable foster parents to maintain records of immunizations, MD visits, school testing and child progress

Required Data Transfer Rate: Single sites with large numbers of users and robust access across underserved communities. 512 kilobits per second upload and download. Access to T1 lines or business DSL, 760k up/1.5 down preferred

Contacts: Licia Knight, Director, Community Standards of Excellence, Lumity and Deborah Strauss, Consultant on Special Projects, Lumity (ddstrauss@gmail.com)

Human Services

The Human Service organization, Erie House, has extensive tech-based programs for all ages including after school and English as a Second Language, and has clients who have moved through their programs from ESL to GEDs and then into the workforce.

Contacts: Licia Knight, Director, Community Standards of Excellence, Lumity and Deborah Strauss, Consultant on Special Projects, Lumity (ddstrauss@gmail.com)

Energy & the Environment: A Standout Example

Nearly all Illinois consumers can file their state income taxes for free at www.tax.illinois.gov and many can also file federal taxes online at www.irs.gov. A March 20, 2008 Chicago Tribune article reports "In Illinois, more are e-filing taxes." The number of people filing their taxes electronically is projected to eclipse paper filings for the first time in Illinois this year.

Benefits: Not only has electronic tax filing saved the state \$2.4 million in paper processing and postage costs since the 2008 tax season began, it reduces the amount of landfill trash, reduces energy use and the pollution associated with manufacturing, transporting, and recycling new paper products.

Contact: Katie Ridgway, Illinois Department of Revenue (Katherine.Ridgeway@illinois.gov)

Consumer Demand Committee Recommendations

To create new broadband success stories in Illinois, and to foster wider awareness of those that exist, we recommend that everyone committed to economic progress in Illinois—especially the Illinois Broadband Deployment Council, the eventual non-profit state broadband organization enlisted through Public Act 95-684 and other relevant organizations—pursue these four outcomes:

1. **EXPANDED INVENTORY OF BROADBAND BENEFITS.** Drawing from expertise in our state universities, libraries, hospitals and businesses; using clear metrics to put case studies in plain English, Illinois should publish a searchable, easy-to-find, ever-growing catalog of “killer” broadband applications from across the state. (This report marks a concrete step toward this goal.)
2. **EXPANDED INVENTORY OF BROADBAND COSTS.** Every case study highlighted in this report depends on some user’s ability to pay for access to high-speed information and communication networks. In Illinois, we know anecdotally that the vast majority of residential consumers have access to “better than dial-up” Internet service. However, even in the residential category of access, there remain great disparities in the cost of fast Internet options. Further, it’s critical we not overlook the much greater bandwidth requirements of the other nine broadband consumer sectors outlined in this report. If we want to encourage broadband-enabled growth, world-class broadband networks must not be cost prohibitive. California’s groundbreaking collection and publication of residential broadband pricing statewide is a model for one segment of the economy that should be repeated for non-residential broadband consumers in Illinois. We suspect that residential offerings in Illinois are comparable to those in California, but we lack comprehensive data on the availability and pricing of services for business, education and other enterprise-level consumers of broadband service. With more information, we can make better decisions about whether and how to stimulate beneficial applications in all of the relevant segments of our economy.
3. **TRAIN-THE-TRAINER PROGRAMS.** To assist local and regional communities in “visioning” and other development plans, Illinois should cultivate programs like WIU’s MAPPING effort, the Minnesota-based Blandin Foundation’s “Get Broadband” project, and periodic large-scale conferences, symposiums and colloquiums for community leaders to convene regionally or statewide to meet experts and share strategies for exploiting the potential of broadband technology in every sector of the local economy.
4. **STATE LEADERSHIP IN DIGITAL GOVERNMENT.** State resources to improve communications access and infrastructure should be used not just to map and predict existing demand for services, but to stimulate new demand. Creating more web-based tools (like Illinois workNet and online tax returns) for wide-reaching government services is the best way to start. Prioritizing the development of new online tools will require cooperation among state agencies and our many research institutions.

In closing, we think Illinois would be wise to take direction from California's Broadband Task Force, which stated as a central goal in their landmark 2007 report: "[We] must drive the creation and use of applications that produce the greatest economic, educational, and social benefits for [our] economy and communities." Indeed, let's use this report and the dialogue it will produce to find more compelling applications that should be added to this beginning and replicated across the state.

Infrastructure Subcommittee Report

The recommendations of the Broadband Deployment Council Infrastructure Subcommittee, like those of the Broadband Deployment Council's Policy Subcommittee are based on Legislative findings in Public Act 95-684 (SB 766), passed in 2007. (Ref: BDC's Policy Subcommittee report). This report notes the importance of advanced communication services to Illinois, especially economic development, public safety, health care, education, and quality of life. It also notes the importance of public/private partnerships, and the responsibility of local governments for ensuring the needs of their community are met.

Guiding Principles

Guiding principles of the BDC's Infrastructure Subcommittee include:

- Illinois should establish, as a key high priority objective, the goal of ensuring that the state has excellent digital communications capabilities for all areas and communities. Illinois should institute policies and practices that would allow it be recognized as a world leader in digital communications services and infrastructure deployment.
- This goal has several implications, including ensuring that required major policy reform take place, an issue that is being addressed by the BDC Policy Subcommittee. Currently, communication services in Illinois are being governed primarily by policies developed for telephone services and incorporate principles developed over 60 years ago. These obsolete policies constitute a major impediment to advancing communication services in Illinois.
- Illinois must remove existing artificial barriers to services implementations, many of which result directly from obsolete State policies related to analog telephone services, and it must provide appropriate policy incentives, not subsidies, for all stakeholders. Traditionally, the State has been closely involved in determining service definitions, implementations, boundary transitions, and technical specifications. In part, this approach was possible, because the basic telephone technology was a fairly simple one that did not change for many years. Today, however, rapidly changing services, technologies, and implementation methods cannot be addressed by these slow paced administrative processes. Such processes are a major impediment to development and implementation of innovative advanced services and technologies.
- Establishing a goal of excellence implies the development of metrics that will allow for the objective measurement of progress in this area and for comparative studies with other implementations both nationally and internationally. Increasingly, Illinois must compete with other regions world wide as part of the dynamics of a global economy, and such measurements will assist in determining Illinois's relative position with regard to other areas. Such metrics would measure not only access to general services but access to required specialized and advanced services.
- These policies are not intended to imply that the State will provide services, except as a last resort or in those circumstances that require the State to provide specialized services for specific communities. For example, the State supports the Illinois Century Network, which provides specialized services designed to meet the needs of its constituent communities. Other examples are emerging services related to weather prediction and real time measurement, traffic management, and to State university support for large and small scale science experiments and instruments.

- State communications policies should be developed to emphasize the importance of digital communications infrastructure as a foundation for necessary services.
- State digital communications infrastructure development and deployment would benefit significantly through public-private partnerships. For example, there are some areas of Illinois in which fiber builds are not economically feasible if undertaken by any single entity. However, public/private partnerships established by multiple entities may be able to provide for economically feasible projects.
- State policies should be developed to ensure the development especially of core communications infrastructure consisting of conduit, fiber, interconnection nodes, and foundation structures.

Recommended Public Policy Initiatives:

1. **EDUCATION.** Today, few state decision makers are aware of major issues related to communications infrastructure. An important objective is to establish an initiative to educate key state decision makers on the basic issues related to communications infrastructure. To accomplish this goal, it is necessary to develop materials, to organize special forums, and to stage demonstrations of advanced technologies. Related to these educational activities are informational materials related to construction requirements, including basic materials and resources, capitalization requirements, and options for financing. Also, this initiative would explain how current policies related to infrastructure developed decades ago and are in need of major reform. Often, existing policies provide major barriers to development. For example, current policies overly regulate infrastructure at many levels. These policies were developed when different communication modalities (e.g., voice, video, data, wireless, etc.) each had separate infrastructure. However, digital convergence is allowing a single infrastructure to support all modalities. Also, digital convergence is eliminating the barriers between modalities. Any service can be an integration of voice, video, data and other modalities. Yet, State policy does not recognize these major changes in communication services and infrastructure. For example, voice services are addressed almost as if they were only provisioned on analog infrastructure. Lack of clarity and complexity in these policies generates uncertainty and therefore is restrictive to investment. As part of this educational effort, special consideration should be given to information on options for investment financial models. This is a complex, quickly changing area that provides for many different options related to a large numbers of variables related to services, infrastructure and economic models, much beyond the scope of this document.
2. **GOVERNANCE.** Currently, digital communications in general, and infrastructure in particular, are widely viewed as critically important resources. However, no single State of Illinois organizational entity has specific responsibility for this area, although many organizations, both public and private sector, are involved with these issues at many different levels. A single organization or group should coordinate State broadband infrastructure responsibilities. The scope and breadth of infrastructure coordination and education performed by this entity would be driven by cross sector and cross organizational needs and considerations. This recommendation should not be understood to imply that any additional regulation is required. Regulation should not be allowed to impede progress. State policy should encourage real competition in the market place. The recommended formal organizational structure could become a clearing house for revising the existing obsolete policies and practices and for educating stakeholder communities about key issues. This entity could also provide for coordination of large scale infrastructure efforts to allow for optimization of benefits for all parties involved. Often

such projects consider only a narrow set of issues and not a larger context. For example, in some municipal areas, the roads are sometimes repeatedly retrenched to allow for multiple parallel fiber implementations, which is costly for the municipality, the providers and the service customers. A more coordinated approach would provide efficiencies to all parties. For example, IDOT does not allow utilities to trench across the surface of existing state highway pavements. Instead, utility companies are required to safely bore underneath such structures, preventing disruption to the pavement surface or the vehicle traffic using it.

3. **STANDARDS.** Currently, Illinois policies related to infrastructure often encourage the implementation of costly obsolete infrastructure components even though more cost-effective current infrastructure is readily available. An initiative should be established that would develop open, transparent, widely available standards for implementing core infrastructure, including conduit and fiber, for state and privately funded projects. Such standards would lower cost for all stakeholders and would help insure interoperability. No organizational entity would be compelled to adhere to these standards. Adherence would be motivated by the benefits that they provided.
4. **PROCESS STREAMLINING.** Currently, communications infrastructure projects in Illinois are much more complex, time-consuming, and resource intensive than necessary. As a result, services are more costly, and often less efficient, sometimes resulting in implementations being delayed or cancelled. An initiative should be established to make model communications/network infrastructure development processes available to key constituencies, including mayors, municipalities, IDOT, regional planners, etc.
5. **REMOVING IMPEDIMENTS.** Currently, major implementation projects must undertake multiple processes from multiple entities in order to deploy basic infrastructure. An initiative should be established to eliminate artificial and costly barriers to implementing communications/network infrastructure. Illinois should take advantage of available Internet-based methods to reduce the resources required to design and implement communications infrastructure. It is possible to create portals that would provide interlinked information on model infrastructure construction standards ordinance, modifications if applicable, construction standards ordinance if the model was not adopted, interactive zoning maps, Rights-of-Way ordinances, including for special environments (e.g., general or specific environmental impact, residential, wet lands, park land, etc). Such portal could also assist with permitting procedures across governmental domains, State, county, municipality, unincorporated area, and others. These portals could make it possible to sketch a proposed fiber route on an area map and receive all the appropriate information required to undertake that fiber build.
6. **PUBLIC/PRIVATE PARTNERSHIPS.** To attain the goal of excellent infrastructure in Illinois, new models of private public partnerships will be required. The traditional model of interaction provided for a State agency that regulated a particular service modality that was provided by a relatively few organizations. The cost and complexity of large scale infrastructure projects, and especially the importance of these projects, requires both the active participation of multiple public and private entities and for more streamlined processes for such interaction. Current processes require substantial funding for participation.
7. **PLANNING PERSPECTIVE.** To date, State policy decision-making has been more reactive than proactive, in part, because the context for discussions and decisions has tended to focus on short time horizons. However, decisions on key issues taken today will have major influence on future capabilities and potentials for many communities throughout the State. Large scale infrastructure policy planning requires serious considerations not only of short term results but of the long

term future consequences. For example, the State can provide a coordinating role among multiple public/private entities who would find it beneficial to form cooperative partnerships to undertake fiber builds in remote areas in Illinois.

8. **PRIORITIZATION.** A process should be initiated to assess the priority order of addressing these recommendations. For example, the governance recommendations could be addressed first, perhaps establishing an entity that would have the authority and responsibility to coordinate, organize, document, and report on improvement and implementation efforts related to these public policy initiative recommendations: education, standards, process streamlining, and removing impediments.

Policy Subcommittee Report

The emergence of the information age demands that Illinois build on its rich economic, social, and cultural history to develop a global reputation for its digital infrastructure. This concept suggests the need for state policies that foster leadership excellence in all aspects of digital communications.

Legislative Findings

Recommendations of the Broadband Deployment Council Policy Subcommittee are based on Legislative findings in Public Act 95-684 (SB 766), passed in 2007:

1. The deployment and adoption of high speed Internet services and information technology has resulted in enhanced economic development and public safety for the State's communities, improved health care and educational opportunities, and a better quality of life for the State's residents.
2. Continued progress in the deployment and adoption of high speed Internet services and information technology is vital to ensuring that this State remains competitive and continues to create business and job growth.
3. The State must encourage and support the partnership of the public and private sectors in the continued growth of high speed Internet and information technology for the State's residents and businesses.
4. Local governmental entities play a role in assessing the needs of their communities with respect to high speed Internet services and information technology.

Guiding Principles

Guiding principles defined by the group include:

- Policy recommendations must take a holistic view of the State's telecommunications potential and needs in order to remove obstacles and offer incentives for public and private service developers and providers, as well as for end users.
 - Policy should recognize the importance of basic communication infrastructure that provides the best service possible.
 - Infrastructure must be suited to a wide variety of uses, including emergency services, businesses, health care, educational and cultural organizations, and individuals.
- Competition in the communications industry drives technological advancements and higher speeds of connectivity.
- Changes to or the adoption of public policy in Illinois should foster competition in the communications marketplace.
- All providers of communication services, whether public or private, should be treated equally, and a level playing field for competitors should be maintained.
- Public-private partnerships are essential to developing the State's capacity to improve access and provide affordable services.

- State policy must recognize the realities of market failures and government's role into in supporting the delivery of advanced communication service to underserved areas.
- It is vital to foster sustainable leadership that will institute healthy changes in the State's current regulatory and business climate and plan for future changes.
- State policies need to be developed to produce measurable outcomes that demonstrate effective leadership, high levels of service, high performance, and quality access across all communities of Illinois.
- "High Speed Internet" is defined as "High Performance Internet" to include high-quality serviced based on adequacy.

Implementation Elements

According to Emergency Regulations proposed by the Department of Commerce and Economic Opportunity (*Illinois Register*, 14-547-08), the purpose of the High Speed Internet Services and Information Technology Program (authorized by PA 95-684) is to encourage and support the partnership of the public and private sectors in the continued growth of high speed Internet and information technology for the State's residents and businesses. The ultimate goal of this program is to ensure that all State residents and businesses have access to affordable and reliable high speed Internet service, thus providing opportunities for small businesses to compete in a global marketplace.

The proposed rule provides for establishing a statewide nonprofit organization to advocate for information technology. It provides an outline for developing and implementing a high-speed Internet deployment strategy and demand creation initiative. According to the proposed rule, the organization's required activities include:

1. Creating a geographic statewide inventory of high speed Internet service and other relevant broadband and information technology services. The inventory shall:
 - d. Identify geographic gaps in high speed Internet service through a method of GIS mapping of service availability and GIS analysis at the census block level; and
 - e. Provide a baseline assessment of statewide high speed Internet deployment in terms of percentage of Illinois households with high speed Internet availability.
2. Tracking and identifying, through customer interviews and surveys and other publicly available sources, Statewide residential and business adoption of high speed Internet, computers, and related information technology and any barriers to adoption.
3. Building and facilitating in each county or designated region a local technology planning team. Each team shall benchmark technology use across relevant community sectors, set goals for improved technology use within each sector, and develop a plan for achieving its goals, with specific recommendations for online application development and demand creation.
4. Collaborating with high speed Internet providers and technology companies to encourage deployment and use, especially in underserved areas, by aggregating local demand, mapping analysis, and creating market intelligence to improve the business case for providers to deploy.
 - a. Collaborating with the Department in developing a program to increase computer ownership and broadband access for disenfranchised populations across the State.

The program may include grants to local community technology centers that provide technology training, promote computer ownership, and increase broadband access.

- b. Applying and implementing federal grants consistent with the objectives of the Act.
- c. Obtaining or raising funds other than the grants received from the Department to implement the objectives consistent with the Act. (20 ILCS 661/20)

Recommended Public Policy Initiatives:

1. IMPLEMENT SB 766. Full and rapid implementation of SB 766 (Public Act 95-0684).
2. REFORM ILLINOIS TELECOMMUNICATIONS ACT. Form a select joint committee or blue ribbon commission to reform the Illinois Telecommunications Act. The agenda should include world leadership in advanced high-performance Internet to provide the best possible array of services. Motivation of the committee should be to develop model policy that demonstrates flexibility for different segments of the telecommunications industry
3. MODERNIZE CURRENT REGULATIONS. As soon as possible, modernize the existing Illinois Telecommunications Act, which has not been overhauled since 2001. The goal of this overhaul is to move the state toward global telecommunications leadership that cultivates innovation across the diverse telecommunications industry, while increasing opportunities for public-private collaborations and equitable access.
4. REMOVE BARRIERS. The removal of artificial barriers to network deployment and enhancement, including:
 - a. The adoption of legislation similar to Iowa Code 476.27 creating standards by which a telecommunications provider can deploy network across a railroad.
 - b. Minimizing the time, effort and expense for obtaining the necessary permits from multiple jurisdictions for network deployment.
 - c. A nondiscrimination policy regarding utility pole attachments so long as safety and technical standards are maintained.
5. PROVIDE INCENTIVES. The adoption of public policy which offers incentives to communications providers to extend and enhance networks similar to the policy adopted by Wisconsin (<http://www.legis.state.wi.us/2005/data/SB483hst.html>). For other examples, see <http://illinoisbroadbanddeployment.pbwiki.com/State+strategies>.
6. TAX RELIEF. The adoption of public policy that gives users of Internet connectivity tax relief to users and providers. Increasing the tax burden works against innovation and dissuades use of products and services.

Summary and Conclusion

Committee members widely agree that the State of Illinois should have a formal organizational entity that is responsible for providing leadership on critically important communications policy issues. The leadership needs to be able to demonstrate progress toward moving Illinois to the top of telecommunications in the nation and around the world.

Currently, however, there is no formal State-level organization to focus on these issues, although many public and private agencies are involved at many levels. While the Lieutenant Governor's office has taken a leadership role, there is no formal, organizational process. The committee endorses the continuation of these current efforts until a formal process can be implemented.

Most importantly, however, we urge the State of Illinois to move forward with revisions of the Telecommunications Act as soon as possible to cultivate a policy that is planned, coherent, flexible, encourages innovation, and is equitable for all residents across the State.

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