S. HRG. 110–1225

WHY BROADBAND MATTERS

HEARING

BEFORE THE

COMMITTEE ON COMMERCE, SCIENCE, AND TRANSPORTATION UNITED STATES SENATE

ONE HUNDRED TENTH CONGRESS

SECOND SESSION

SEPTEMBER 16, 2008

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SENATE COMMITTEE ON COMMERCE, SCIENCE, AND TRANSPORTATION

ONE HUNDRED TENTH CONGRESS

SECOND SESSION

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CONTENTS

WITNESSES

APPENDIX

WHY BROADBAND MATTERS

TUESDAY, SEPTEMBER 16, 2008

U.S. SENATE,
COMMITTEE ON COMMERCE, SCIENCE, AND TRANSPORTATION,
Washington, DC.

The Committee met, pursuant to notice, at 10:37 a.m., in room SR–253, Russell Senate Office Building, Hon. Daniel K. Inouye, Chairman of the Committee, presiding.

OPENING STATEMENT OF HON. DANIEL K. INOUYE, U.S. SENATOR FROM HAWAII

The CHAIRMAN. Good morning. In this morning's hearing, we explore the question why broadband matters. Broadband matters because broadband communications have become the great economic engine of our time. Broadband deployment drives opportunities for business, education, health care. It provides widespread access to information that can change the way we communicate with one another and improve the quality of our lives.

This is why our discussion this morning is not about pipes and providers. It is about people. Our citizens stand to gain the most from universal broadband adoption. By some estimates, universal broadband adoption would add $500 billion to the United States economy and create more than a million new jobs, and added to this, hundreds of millions of dollars in savings through government and telemedicine initiatives and untold riches we can reap by tapping the genius of Web-based entrepreneurs in every corner of this country. I think the case for better broadband is very clear.

Still, our broadband state is not what it should be. Though controversial in some quarters, rankings among the Organization for Economic Cooperation and Development (OECD) showed the United States slipping down the international broadband ranks. As of this year, for the first time, China has a larger number of broadband subscribers than the U.S. By some measures, Asian and European countries have high-speed connections that are 20 times faster than ours and for just half the cost. And I believe that all of us will agree this is unacceptable and we should do better.

So let me offer my thoughts about where to begin. I believe we cannot manage problems that we cannot measure. For this reason, last year I introduced S. 1492, the Broadband Data Improvement Act, which is designed to enhance our understanding of broadband deployment and adoption in every state. This bill is not about regulation or deregulation. This is about getting the facts because from good information flows good policy.

So I hope in the remaining days of this Congress that Members of this Committee can work together to advance this measure or something similar to that in the Senate. Together I believe we can look back and say we understand that broadband matters and we did something about it.

Senator Stevens?

STATEMENT OF HON. TED STEVENS,
U.S. SENATOR FROM ALASKA

Senator STEVENS. Mr. Chairman, thank you for scheduling this hearing.

In Alaska, our residents, especially our elderly residents, depend upon the ability of their health care providers to be able to communicate rapidly and effectively over the Internet with the health care community. Many Alaskans live off the road system in our rural areas, and the bottom line is that broadband is often the only way for them to receive the same quality of health care as Americans living in what we call the South 48.

Today I intend to introduce the Telehealth for America Act of 2008, which will be a bill to improve health care for rural America by allowing smaller rural health care providers to participate in the Universal Service Program. The Universal Service Fund was meant to provide the Nation's rural health care providers with access to advance telecommunications services.

Currently, however, the Communications Act only provides for Universal Service Fund support to larger health care providers, but it is clear that smaller, remotely located health care providers also need to be connected to the Internet. Allowing smaller, specialized rural health care entities to access the Universal Service Fund will enable them to combine forces with the health care community.

For example, this bill would enable small providers to share information such as medical records, provide improved training to health care personnel through videoconferencing without requiring the personnel to travel away from the provider area and to enhance the overall ability of the health care community to provide rapid and coordinated responses to all Americans in time of crisis.

Specifically, my bill will revise the definition of health care providers eligible to receive Universal Service support to include smaller, specialized rural health care entities such as doctors' offices, emergency medical facilities, hospices, blood banks, pharmacies, dental clinics, and facilities caring for our veterans.

The bill will also require the Federal Communications Commission to report to Congress on its system of fiscal controls and accountability over the Universal Service Fund programs. The Universal Service Fund program is vital to our schools, libraries, and health care providers. It is equally important that these programs be involved with advanced technology and grow with the Internet.

And I look forward to working to try and move this bill forward so that Americans in all parts of the Nation can have improved access to quality health care, particularly in rural Alaska.

Again, I want to thank you for including at the end of this testimony, testimony from the President of the YKH Corporation in Bethel, Alaska. I think you will find it is going to be a very interesting conversation. Thank you.

The CHAIRMAN. If I may, may I be listed as a co-sponsor?

Senator STEVENS. I would be delighted to have you co-sponsor, Mr. Chairman.

The CHAIRMAN. Thank you.

Senator Nelson?

STATEMENT OF HON. BILL NELSON,
U.S. SENATOR FROM FLORIDA

Senator NELSON. Mr. Chairman, you said it well. I do not need to add anything except to say I am a co-sponsor of the Broadband Data Improvement Act and hope we can get it moving. We had hearings on it last July.

So thank you for having this hearing today, and if I may, I will submit the statement for the record.

The CHAIRMAN. Without objection, so ordered.

[The prepared statement of Senator Nelson follows:]

PREPARED STATEMENT OF HON. BILL NELSON, U.S. SENATOR FROM FLORIDA

For more and more Americans, affordable and accessible broadband service is no longer something that is merely desirable.

It's now a necessary component of our economy.

From telecommuting to telemedicine, increased broadband connectivity has the potential to improve our productivity and the overall quality of our lives.

Unfortunately, the true promise of broadband in the United States has not been met.

After years of discussion, we are still one of the few developed countries lacking a comprehensive national plan for universal broadband access.

And the results of that failure are starting to show.

In 2000, the Organization for Economic Cooperation and Development (OECD) began ranking broadband subscribership.

That year, we ranked 4th among 30 nations surveyed.

Now we are 15th.

A similar study by the International Telecommunications Union (ITU) puts us 24th in the world—behind Korea, Denmark, Iceland, Canada and Sweden.

We've let this lack of national planning go on for far too long—and now the chickens are coming home to roost.

Through this hearing today, I hope we can further illustrate the benefits of universal broadband access.

In addition, I really hope we can also get some movement on some sort of national planning mechanism.

The Broadband Data Improvement Act (S. 1492), of which I am a co-sponsor, represents a major step in that direction.

We reported it out of Committee last July.

Now it's time for the full Senate to pass this legislation.

Senator STEVENS. I might say to the Senator from Florida, we might be able to make this small bill I am putting in as an amendment to your bill. I would like to chat with you about that.

The CHAIRMAN. We have six witnesses this morning: first, the Chairman and Chief Executive Officer of One Economy Corporation of Washington, Mr. Rey Ramsey; the President of the Communications Workers of America, Mr. Larry Cohen; the Executive Director of the American Telemedicine Association, Mr. Jonathan Linkous; AARP Board Member, Dr. Mara Mayor; Missouri State Librarian, Ms. Margaret Conroy; and the President and CEO of Yukon-Kuskokwim Health Corporation of Bethel, Alaska, Mr. Gene Peltola.

May I call upon Mr. Ramsey?

STATEMENT OF REY RAMSEY, CHIEF EXECUTIVE OFFICER, ONE ECONOMY CORPORATION

Mr. RAMSEY. Chairman Inouye, Ranking Member Hutchison, and Senator Stevens, it is a pleasure to be here today. I have submitted testimony, and I will refer to some of the testimony, but I would rather just speak with you candidly about some of the issues that I see with broadband issues in this country and why it matters.

First, a quick note on One Economy Corporation. We founded One Economy Corporation 8 years ago, and I sort of smile sometimes when I think about the timing of it because that is when the technology bubble burst. And when I told my father I was starting One Economy Corporation, he smiled about the timing and told me I had had a good job.

So we started One Economy with the goal of using broadband to assist low-income individuals with a double-sided approach, to look at both the supply side and the demand side.

So on the supply side, particularly in the year 2000, what we discovered very quickly was too many low-income individuals and individuals living in rural communities did not have access to broadband. And our strategy really focused on three basic principles: to make sure broadband would be affordable, to make sure it would available, and very importantly, to make sure it would be useful. And I would like to just unpack those three issues because all three are important.

The affordability issue has been crucial, and I think some of the things around competition, the lowering of the costs of broadband, networking affordable housing developments, has had some impact on driving down some of the costs, although there is more to be done.

Available. As you know, Mr. Chairman, there are many rural communities that it is still not available the way it should be, but I would like to spend more time focusing on the issue of how useful it is, and that is the issue of the demand side of broadband.

I think this is the most crucial area for us to focus on in this country. We started at One Economy to focus on this area that we refer to as content, public purpose content, public purpose media, and when we look at the issue of poverty, we said one of the most important issues is making sure that we do not have information haves and information have nots. There is a nexus, a very important nexus, between the quality of information and the quality of life. There are a lot of people who do not have access to a doctor and do not know where to get a doctor. There are many people who are trapped in poor performing schools, and yet we have the means to be able to bring content and teaching tools to those individuals if we are smart about how we apply broadband.

And so in this whole supposed digital divide movement, most of the attention has been paid to the issue of supply, and I think that is important. But we would like to see more attention paid to the applications of the technology.

So just to give you a few examples. We launched a website a number of years ago called the Beehive, *www.thebeehive.org,* which is a portal design for low- and moderate-income individuals to deliver information on health, on jobs, getting the Earned Income Tax Credit, taking advantage of several programs. In the past couple of

years alone, as we have done outreach campaigns online to help low-income people—just this past tax season, we helped people get $10 million back just in a few cities of the campaign on their taxes, and it was all filed online. And these were low-income, limited literacy individuals, proving that you could use technology to help people. We have had more than 15 million individuals use that website to be able to access important public purpose information.

Later this year, December 11 of this year, we will be launching our most ambitious effort yet called the Public Internet Channel, which will be an online space that is designed to be able to bring information around health, around employment, around starting a business, around a whole host of areas in partnership with many other organizations, in both English and in Spanish, to be able to bring the benefits of broadband to more people.

So our focus and what we urge Congress and many others to look at is how we can make sure broadband is affordable, it is available, and it is useful to people because, again, it is both a supply and a demand side issue, and we would like to see more attention paid to the demand side because we could do more. We are not making enough investments on the applications of technology, and where a lot of focus is spent on who has broadband and who does not, the real issue is if we can make sure there are applications available to buttress our health care system, to buttress our education system, to buttress our workforce development system, you will get more innovation, more people wanting to go online. There are people now that have broadband available to them, but they do not avail themselves because they do not see that the applications are actually speaking to them.

And this is where I think there is an ideal collaboration between the private sector and a nonprofit like ours. So we team up with companies both on the supply side and the demand side, the Ciscos, the Verizons, the AT&Ts, the cable industry. We work very closely with Google on content so that our content is searchable for people. So we will not rest as an organization until we can form more partnerships to make sure broadband has that universal application that we think this country so desperately needs.

So I submit that to you as my remarks today.

[The prepared statement of Mr. Ramsey follows:]

PREPARED STATEMENT OF REY RAMSEY, CHIEF EXECUTIVE OFFICER, ONE ECONOMY CORPORATION

Chairman Inouye, Ranking Member Hutchison, I thank you for the opportunity to be here today. My name is Rey Ramsey, and I am the Chief Executive Officer of One Economy Corporation.

One Economy is a global nonprofit that leverages the power of technology and information to connect low-income people to the economic mainstream. We bring broadband into the homes of low-income people, produce public-purpose media, and train and employ youth to enhance communities' technology capacity. Our work has taken hold in four continents, from big cities to small rural towns. Since our founding in 2000, our work has reached 15 million people.

When I look at the state of broadband today, I see good news and bad news.

The good news is that our country's efforts to stimulate the supply of broadband have worked well. Most Americans have *access* to broadband service—by which I mean it is available where they live if they want a connection to their home computer. In fact, according to the Federal Communications Commission's Zip Code level data, in more than 90 percent of the United States, consumers can choose from

three or more broadband providers. Nearly 60 percent of Americans have *adopted* broadband by paying for a high-speed connection.

But those positive trends in broadband availability should not overshadow the significant inequality in broadband adoption between rich and poor communities. According to the most recent Census Bureau data, while 76 percent of households earning more than $50,000 per year are connected, only 35 percent of homes with annual income less than $50,000 have adopted broadband in their homes.

At One Economy, we have focused our efforts on low-income consumers—increasing and aggregating their demand for broadband. Technology—broadband in particular—is at the forefront of the 21st century fight against poverty because there is an increasingly important connection between the quality of information available to people and their quality of life.

For example, 70 percent of working families who receive the Earned Income Tax Credit (EITC) pay for professional help preparing and filing their taxes and as many as 25 percent of families who qualified for the EITC did not receive it.

This year, we partnered with H&R Block and E*TRADE to make free tax preparation and filing available online. Families using our site, the Beehive (*www.thebeehive.org*), received nearly $10 million in state and Federal refunds. In addition to the $1,000 average refund they received, broadband made possible the education and support these families needed to file for themselves, saving hundreds of dollars in fees.

Broadband is a particularly powerful tool for fighting poverty because it minimizes problems of time, mobility, and geographic isolation.

One Economy recently began work with the Warm Springs Indian Reservation in Oregon, home to nearly 4,000 members of the Warm Spring, Wasco, and Paiute tribes. Broadband is already available on the reservation; the Warm Springs Tribe built a Motorola canopy-based wireless solution to provide broadband to the local government and individuals. But uptake among residents has been slow, in part because the average monthly cost is $50—out of reach for many area families.

In the coming months, we will work with reservation leaders to make broadband a relevant and affordable tool. In addition to lowering the cost of home access and creating public access points, we will use broadband and the applications it makes possible to expand tribal member participation in government, support small business development, preserve native culture, and improve members' digital skills. Young people will be trained in technical and leadership skills so they can become cultural bridges between their community and technology.

Government can play a role in stimulating demand, as the tribal government in Warm Springs is doing. Creating public-purpose online media—media that puts vital information and tools directly in the hands of citizens—can demonstrate the value proposition of bringing broadband into their lives and homes. For low-income people, who are often caught in a web of government programs and services, simple and direct online access to those programs can mean the difference between missing a day of work to stand in line at a municipal building and getting help in the comfort of one's home.

Above all, we believe in meeting people where they are. Our signature website, the Beehive, was created to be useful and useable for an audience that may have a lower literacy level and may not speak English as their primary language. The Beehive provides low-income individuals with online access to the information and connections they need on a local level to improve their lives while eliminating the language, literacy and cultural barriers that keep over 50 million Americans from fully utilizing the benefits offered by the World Wide Web.

The results have been dramatic. Among them: 600,000 high school students have received help with their homework, 415,000 people have learned about managing diabetes, and nearly 1 million people have learned how to secure their computers and stay safe online.

We create these online tools and resources not only to help people improve their lives, but also to introduce them to the wealth of life-changing information available online.

Independent research and our own experience suggest that the principle barriers to people adopting broadband in their homes have less to do with access and affordability and more to do with helping people to understand the value of broadband, helping to alleviate concerns about online safety, and a series of other educational and cultural issues. A 2007 survey by the Pew Internet and American Life project asked non-Internet users why they are not online. You might expect the number one reason to be cost. In fact, one-third of people not using the Internet said they are just not interested.

This is not to discount the importance of cost and the work that still needs to be done in that area, but these findings show that even when broadband is available and affordable, other concerns remain to be addressed.

These opportunities to improve health, education, and economic livelihood in low-income communities demonstrate that while universal access is an important goal, it is only a starting point. Our experience has shown that additional steps—efforts that are less about a specific technology and more about education and creating a culture of use—are needed to ensure that the benefits of the Digital Age are reaching the communities that need them most.

At One Economy, we believe that the time has come for a broad-based effort to provide these kinds of information and tools online. To that end, we have created the Public Internet Channel (*PIC.tv*): public-purpose programming designed to inform, engage, and help people take action. The Public Internet Channel grew out of our experience delivering culturally relevant, multilingual information to low-income and low-literacy audiences.

For every new 20th-century communications technology, Americans have created public-purpose programming that uses the power of the airwaves to spread common knowledge and bring people together on common ground. On television, the Public Broadcasting System's viewers explore national and local issues. On the radio, listeners tune into local National Public Radio affiliates to hear educational and civic-minded content that cuts across differences in race, class, gender, and geography.

By providing the Public Internet Channel directly to all Americans, we hope to narrow the information gap that divides communities and provide a common space that crosses racial, gender, age, religious, geographic and political barriers.

The millions of people who have taken advantage of our online resources to file their taxes, find better schools for their children, start new businesses, and take other steps to improve their lives demonstrate the need for such an effort.

Again, I appreciate the Committee's interest in how broadband stands to benefit low-income communities. I believe that a policy that brings the traditional conception of universal service into the digital age, while addressing the broad spectrum of reasons why people are not online, stands to improve the lives of millions of Americans.

The CHAIRMAN. Thank you very much, Mr. Ramsey.

May we now receive testimony from President Cohen?

STATEMENT OF LARRY COHEN, PRESIDENT, COMMUNICATIONS WORKERS OF AMERICA (CWA)

Mr. COHEN. Thank you, Mr. Chairman. It's great to be here. I appreciate the opportunity and also the focus of this work by the Committee.

I am Larry Cohen, the President of CWA. We represent 700,000 members. Our members build, maintain, and service these networks that we are discussing here today and are also journalists and broadcasters and others who create the content that travels over the communication networks of our country. So our members and our union everyday see why broadband matters and why the speed of broadband matters.

Two years ago, we launched our national campaign called Speed Matters. The main website is *speedmatters.org*. Over the past two years, CWA members, working with community groups and activists across the country, have tried to boost up the public attention and information about why broadband matters, and specifically why the speed of broadband matters.

There are dozens of examples which you wil1 find in my written testimony. I am not going to go through the examples, but they range from workers in the communications industry itself like 500 customer service workers in rural Virginia who work at an AT&T call center. If there were no broadband there, they obviously would not be employed. It used to be a mining area. So in terms of the

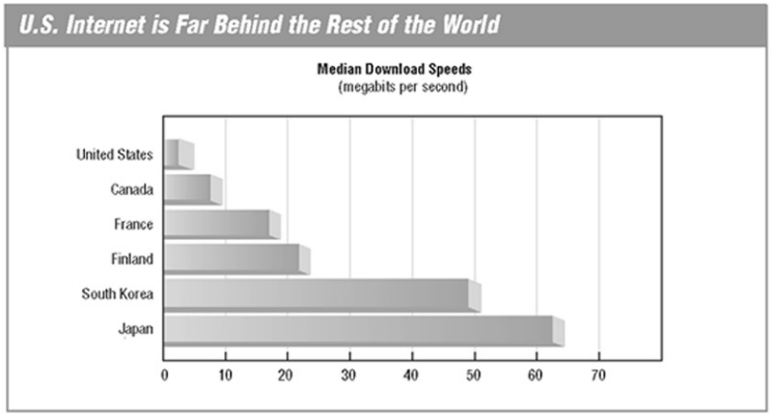
conversion of our economy for the 21st century, high speed broadband is absolutely critical.

But also small business. In our Speed Matters campaign, we talked to farmers in rural Vermont who told us their broadband connection allowed them to double their maple syrup business through Internet marketing and sales. Farmers in Iowa, a similar thing. They were part of the global economy and it would make a huge difference. Small businesses in Appalachia and southern Ohio creating new jobs through Connect Ohio, a public/private partnership, similar to the one Mr. Ramsey described, and bringing high-speed Internet to an industrial park in an underserved area.

Examples go on and on. Internet learning. We now estimate 3.5 million students a year take one or more courses on the Internet. So the demand side is growing. We need to stimulate that demand.

I want to jump, though, to this chart. Part of our focus in Speed Matters has been that Internet speed matters, that we have defined broadband totally inadequately in the United States, so we actually overstate its presence.

[The information referred to follows:]



Source: International data from the Information Technology and Innovation Foundation (ITIF); U.S. data from *speedmatters.org* test results. Most test participants had DSL or cable modem connections.

What we see on this chart is the United States, and we could have many more countries, but we picked the U.S., Canada, France, Finland, South Korea, and Japan. The U.S. is trailing, where the average download speeds in the U.S. now, based on our survey, is 2.3 megabits per second. This is people who have broadband. And then you see Japan leading the world in Internet speeds where the average download speed is 63 megabits per second. That gap is enormous in terms of what that produces. And this is the average speed. So in Japan today, 85 percent of homes are passed by 100 megabit service. In the United States, it is a small fraction.

Actually with me in the audience—I would just ask him to stand—Shoji Morishima is the head of our equivalent, the NWJ, in Japan. And what we have seen in Japan for years is the union there, the NWJ, partnering with NTT and the government to promote high speed broadband deployment—this is not an accident

that this happened in Japan. It is because that was the focus of their public policy.

And more than anything else today, we are here to applaud really S. 1492 as a beginning. We are the only industrial country in the world that has no policy in this way, and whether we talk about South Korea or Finland or France and Japan, all of them have had public policy for years now not only to promote broadband, but to define broadband in 21st century terms. In that regard, we applaud not only the Committee and the bipartisan support for S. 1492, but Senator Rockefeller and his resolution for setting goals.

And in our Speed Matters campaign, we have a similar goal, 10 megabits per second passing every American house by 2010. We are not going to get there unless we have real dramatic action and now. And again, 10 megabits per second. Look at where we would be on the chart even with that.

Right now, the only progress we can report in the last year is that the FCC, with your help, has increased the definition of broadband from 200 kilobits to 768 kilobits per second. That happened only this year, again, more than a year into our campaign and more than a year, as Senator Nelson said, since this bill S. 1492 was introduced. 768 kilobits, less than three-quarters of a megabit, and the global standard is actually 100 megabits per second.

And so part two of Senator Rockefeller's resolution is to set a standard of 100 megabits per second in both directions because uploading matters as well. Otherwise, we are only receiving, we are not sharing. And his resolution would call for 100 megabits per second by 2015. We need goals like this and we need the action to bring it about.

How would we do that?

First, as Mr. Ramsey said, public-private partnerships. I am not going to repeat that. He covered that well.

Actually first I would say is pass S. 1492.

Second, establish the kind of goals that Senator Rockefeller has talked about.

Third, public-private partnerships.

Fourth, the Universal Service Fund. We need to, in the future here, look at what we are funding with $6 billion a year. Dial tone does not need that kind of funding anymore. We need to take, in our view, the funds from the Universal Service Fund and focus on high-speed Internet in rural and underserved urban communities in this country. They are not going to get it through the market alone.

And finally, as this Committee has discussed before as well, preserving an open Internet with reasonable network management.

If we do all these things together, we believe that this chart could look different at least two or three years from now and that we are no longer talking about what are other countries doing, but once again, as we were in the 1990s, we are talking about what this country is doing and how we are leading and how we are providing the kind of jobs and education, telemedicine and the other things that others on this panel will talk about today for our chil-

dren, for our parents, for our communities, for our future. Thank you.

[The prepared statement of Mr. Cohen follows:]

PREPARED STATEMENT OF LARRY COHEN, PRESIDENT, COMMUNICATIONS WORKERS OF AMERICA

Good morning, Mr. Chairman and Members of the Senate Commerce Committee. Thank you for the opportunity to testify today on why broadband matters.

I am Larry Cohen, President of the Communications Workers of America. CWA represents 700,000 workers in communications, media, airlines, manufacturing and public service. Our members build, maintain, service, and create the content that travels over our Nation's vital communications networks. Everyday they see why broadband matters.

Speed Matters on the Internet

Two years ago CWA launched our Speed Matters campaign. Over these past 24 months, CWA activists have been spreading the word about why speed matters on the Internet. We've talked about it at state fairs, in union halls, before educators and health care professionals and farm organizations, in dozens of state houses and city council chambers and state broadband commissions. Everywhere we've gone, people get it. Speed Matters on the Internet. We've helped move state broadband initiatives to bring the benefits of this technology to every American household, business, and community in America.

Now it's time to bring national leadership to this critical issue. It is long past time for the Senate to adopt S. 1492, the Broadband Data Improvement Act. This bill would improve Federal broadband data collection, provide grants to states for broadband mapping and for public-private partnerships to stimulate supply of and demand for broadband networks and services. States such as Kentucky, Tennessee, Ohio, Virginia, Washington, North Carolina, California and others have demonstrated the effectiveness of such partnerships, but their work is hampered by state fiscal constraints and the lack of a nationally-focused effort.[1] Adopting a national policy to stimulate broadband subscription where it is already available, and deployment where it is not, could have dramatic and far-reaching economic impacts, estimated at more than $134 billion.[2] A broad-based alliance of 31 groups representing health care, education, labor, rural and public interest organizations, telecommunications and cable companies, and trade associations have joined together to urge Congress to act now to adopt S. 1492 as a critical first step in moving this Nation forward on a broadband agenda. (A copy of this letter is attached to my testimony.)

High-speed broadband is *the* critical infrastructure for the 21st century. In the same way that railroads, canals, and the postal service drove economic development in the 19th century, and interstate highways and universal telephone service helped make us the richest nation on earth in the 20th century, high-speed broadband networks are the platform upon which we will grow jobs and our economy in the coming years. Equally important, advanced networks support innovations in health care, education, public safety, energy, and public services that will improve our lives and communities.

U.S. Trails Behind Other Countries

Our nation is falling behind other industrialized countries in the deployment and adoption of high-speed Internet. You've heard the statistics. The U.S. has dropped

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[1] States that have adopted the Connected Nation public-private partnership model include Kentucky, Ohio, Tennessee, West Virginia, and South Carolina. Additional states with broadband task forces, commissions, authorities or reports include Arkansas, California, Hawaii, Kansas, Maine, Maryland, Massachusetts, Minnesota, Missouri, Nebraska, New Hampshire, North Carolina, New York, South Carolina, Vermont, Virginia, and West Virginia. For more information on state programs, see CWA and Alliance for Public Technology, "State Broadband Initiatives," 2008 (available at *http://www.speedmatters.org/statepolicy*)

[2] Connected Nation found that increased broadband adoption by 7 percent could result in 2.4 million new jobs; $552 million annual health care savings; $6.4 billion annual savings from unnecessary driving; $18 million in carbon credits associated with 3.2 billion fewer pounds of CO_2 emissions per years; and $35.2 billion in 3.8 billion hours saved from accessing broadband at home. Connected Nation, "The Economic Impact of Stimulating Broadband Nationally," Feb. 2008 (available at *http://www.connectednation.org/research/economic_impact_study/index.php*).

to 15th among the world's advanced economies in home broadband penetration.[3] There's a serious digital divide based on income and geography. Families in rural areas are much less likely to subscribe to broadband than those living in urban or suburban communities. And only one-quarter of low-income Americans have broadband, compared to 85 percent of those at the top of the income scale.[4]

Moreover, we're falling behind our global competitors in the capacity of our broadband networks. Last month, CWA released the results of our second annual survey of Internet speeds in all 50 states. You can see the results on the chart—the United States continues to lag far behind other countries.

According to the survey, the median Internet download speed for the Nation is 2.3 megabits per second (mbps). Contrast this to Japan, where the median download speed is 63 megabits per second—30 times faster than in the U.S., and yet the Japanese pay about the same as we do for their faster Internet connection. The U.S. also trails South Korea, Finland, France, Canada, and even Croatia.[5]

Equally troubling, the 2008 speed test shows that the median Internet download speed increased by only four-tenths of one megabit per second over last year. At this rate of progress, it will take the U.S. more than 100 years to catch up with current Internet speeds in Japan.

The CWA report details median Internet download and upload speeds in every state. But whatever state you live in, your Internet connection speed likely trails those of residents of our northern neighbor Canada, a large country with a significant rural population.

Speed Matters for U.S. Economic Growth and Job Creation

Why does speed matter on the Internet? Speed determines what is possible. I'm talking about more than the speed at which you can download movies. Job creation, rural development, telemedicine, distance learning, even solutions to global warming all rely on truly high-speed, universal networks.

High-speed broadband is essential for economic growth. In a report prepared for the U.S. Department of Commerce, economists found that communities with broadband experienced a higher rate of job growth and new business start-ups than communities without high-speed networks. Another study of the central Appalachian region found that firms in communities with broadband were 14 to 17 percent more productive than those in communities without high-speed Internet access. A Brookings Institution paper calculated that build-out of broadband infrastructure to all households would add $500 billion to gross domestic product and 1.2 million additional jobs. Another report warned that the failure to improve broadband performance could reduce U.S. productivity by 1 percentage point or more per year.[6]

Behind these statistics are real stories that people have shared with our Speed Matters team about the ways in which high-speed Internet creates economic opportunity and good jobs across our great nation. Just ask any of the 500 CWA members

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[3] Organization for Economic Cooperation and Development, 2007 (report available at *http://www.oecd.org/document/54/0,3343,en_2649_34225_38690102_1_1_1_1,00.html*). The U.S. ranked 24th in broadband subscribers among all countries, according to the International Telecommunications Union, World Telecommunications Data base 2007 (available At *http://www.itu.int/osg/spu/newslog/ITU+Broadband+Statistics+For+1+January+2005.aspx*)

[4] Fifty-seven percent of urban households and 60 percent of suburban households subscribe to broadband, compared to only 38 percent or rural households. Whereas 85 percent of Americans who earn over $100,000 a year have broadband, only 25 percent of households that earn less than $20,000 subscribe. Only about one-half (49 percent) of middle-income families earning between $30,000 and $40,000 a year subscribe to broadband. Pew Internet & American Life Project, "Home Broadband Adoption 2008." (available at *http://www.pewinternet.org/PPF/r/257/report_display.asp*)

[5] For international data, see Robert D. Atkinson, Daniel K. Correa, Julie K. Hedlund, *Explaining International Broadband Leadership,* Washington, D.C.: The Information Technology and Innovation Foundation, May 2008 (available at *http://www.itif.org/files/ExplainingBB Leadership.pdf*). The CWA Speed Matters 2008 report is available at *http://speedmatters.org.*

[6] William Lehr, Carlos A. Osorio, Sharon E. Gillett, and Marvin Sirbu, "Measuring Broadband's Economic Impact," U.S. Department of Commerce, Economic Development Administration (Feb. 2006) (available at *http://www.eda.gov/ImageCache/EDAPublic/documents/pdfdocs2006/mitcmubbimpactreport_2epdf/v1/rnitcmubbimpactreport.pdf*); Mark L. Burton and Michael J. Hicks, "The Residential and Commercial Benefits of Rural Broadband: Evidence from Central Appalachia," June 2005, Paper prepared for the West Virginia Development Office, Center for Business and Economic Research, Marshall University; R. Crandall and C. Jackson, "The $500 Billion Opportunity: The Potential Economic Benefit of Widespread Diffusion of Broadband Internet Access," Criterion Economics, 2001 (available at *www.ntia.doc.gov/ntiahome/broadband/comments/verizon/ExhibitA.pdf*); C. Ferguson, "The United States Broadband Problem: Analysis and Recommendations," Brookings Institution Working Paper, 2002 (available at *http://www.brookings.edu/views/papers/ferguson/working_paper_20020531.pdf*)

working at an AT&T call center in southwestern Virginia, an area suffering from the decline of the coal and tobacco industries. They'll tell you that building a fiber backbone to their region was literally a lifeline for themselves and their families. Or ask Daniel and Karen Fortin of rural northern Vermont, who told us that their broadband connection allowed them to double their maple syrup business through Internet marketing and sales. A hog farmer in Iowa let us know that direct marketing to customers around the globe using broadband boosted his profit margin. And the owners of several small businesses in the Appalachian region of southern Ohio told us that they were able to create 60 new jobs once Connect Ohio's public-private partnership found a way to bring a high-speed connection to their industrial park. The examples go on and on . . .

Speed Matters Offers Solutions to High Gas Prices and Global Warming

High-speed broadband also offers opportunities to address our energy crisis and to save on gas expenses through reduced travel time. Telehealth, distance learning, teleconferencing, and telecommuting allow people to learn, work, and receive health care services at home without getting in their car. One study estimates that widespread adoption of these broadband applications over 10 years could save the equivalent of 11 percent of annual U.S. oil imports.[7] Other nations and some states and localities are experimenting with the use of smart meters and electric grids to reduce energy consumption by transmitting real-time information about energy use over two-way broadband networks. A statewide pilot project in California found that the information provided to consumers using smart meters reduced energy bills by 10 percent. The Electric Power Research Institute estimates that investment in smart grid technology, including a modernized high-speed Internet communications system, would yield a 20-year benefit of ranging from $638 billion to $802 billion.[8]

Speed Matters for Education and Lifelong Learning

Advanced broadband networks open opportunities for students to participate in online learning and lifelong education. Almost 3.5 million students take one or more courses online every year, according to the Sloan Foundation.[9] Many of these are non-traditional students—working parents, employees who want to advance their careers, or unemployed adults entering the work force. They find the convenience of online learning allows them to take courses without the conflicts of child care, busy schedules, or non-traditional work hours. Online learners who have two-way, video connections carried over truly high-speed broadband can participate in class discussions and ask questions in real-time, creating a virtual classroom experience. States such as New Jersey and Texas have used Federal job training monies to help low-income adults gain new skills through online coursework.[10] CWA offers online education and training programs in three areas—telecommunications, digital media, and criminal justice. Our CWA/NETT Academy, as we call it, allows our members to meet new technical requirements and branch into new areas of study in rapidly-changing industries so they can succeed in their careers. As the quality of U.S. broadband networks improves, our university partners are able to provide ever-more engaging interactive, multi-media learning experiences for our members.[11]

The U.S. Must Adopt a National Broadband Policy

The United States is the only industrial nation without a national broadband policy to promote high-speed broadband. There are a number of bold but specific steps that the U.S. should take to recover our lost leadership and competitive position to ensure that all residents benefit from affordable, high-speed Internet access.

First, we must improve our broadband data collection. The Federal Communications Commission took a first step earlier this year, requiring all carriers to report the number of broadband subscribers at the census tract level by technology type

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[7] Joseph P. Fuhr and Stephen B. Pociask, "Broadband Services: Economic and Environmental Benefits," Oct. 2007 (available at *http://www.internetinnovation.org/Portals/0/Documents/Final_Green_Benefits.pdf*).

[8] See Report of Governmental Affairs Division, Committee on Consumer Affairs, New York City Council, Nov. 15, 2006 (available at *http://webdocs.nyccouncil.info/attaehments/75229.htm*); Economic Power Research Institute, "Power Delivery System of the Future: A Preliminary Estimate of Costs and Benefits," 2006 (available at *http://my.epri.com/portal/server.pt?open=512&objID=210&mode=2&in_hi_userid=2&cached=true)*.

[9] The Sloan Consortium of Institutions and Organizations Committed to Quality Online Education (available at *http://www.sloan-c.org/*)

[10] Dr. Mary Gatt, "The New Digital Divide for Workforce Development Policy: Broadband Access and Skills Training," Sloan Center on Innovative Training and Workforce Development, Center for Women and Work, Rutgers University, 2006 (available at *http://www.itwd.rutgers.edu/mainPages/index.htm*).

[11] For more information, see CWA/Nett Academy at *http://www.cwanett.org*.

and upload and download speed. Now, the Commission is considering reporting requirements on broadband infrastructure.

S. 1492, the Broadband Data Improvement Act, would fill in important gaps in the Commission's broadband data collection. For example, the bill would require the Commission to analyze demographic information in areas without broadband and report on international broadband comparisons; it would require the Census Bureau to collect detailed information about broadband prices, technology, applications, and subscription in its annual consumer survey; and it would require the Government Accounting Office to study best practices for reporting broadband price, speed, and other critical issues.

As I noted earlier, S. 1492 would also authorize a program of grants to states to conduct broadband mapping and fund initiatives to stimulate broadband adoption where it is available, and deployment where it is not. In Kentucky, such a program resulted in a three-year increase in broadband availability from 60 percent to 95 percent of households.[12] CWA members sit on a number of state broadband commissions, and know first-hand the fiscal limitations those bodies face in moving forward with their work. I strongly urge Congress to pass S.1492 this session to improve our knowledge base on broadband deployment and adoption, and to assist states in their important efforts.

Looking ahead, CWA supports a number of other policies to stimulate broadband deployment and adoption. First, we must establish a national policy goal. CWA recommends we set a two tiered goal of build-out of networks with enough capacity for 10 megabits per second downstream and 1 megabit per second upstream by 2010, and capable of delivering 100 megabits per second in both directions by 2015, as proposed by Senator Rockefeller in S. Res. 191. Second, we need to reform our universal service system to support affordable high-speed Internet for all. Third, we should adopt policies that spur deployment of faster, second-generation networks through tax incentives and low-interest loans. Fourth, we should support demand-stimulation programs that fund grants for community-based public-interest broadband applications and services, digital literacy programs, and provision of free and low-cost computers to low-income households. Finally, we must preserve an open Internet, subject to reasonable network management. In all these initiatives, we must continue to safeguard consumers and promote good career jobs for workers in the industry.

I want to conclude with a story that captures how Speed Matters can erase the barriers of time and distance to improve lives. This past summer, Marine Lance Corporal Michael Cintron was 6,000 miles away from home when his wife Jeanine gave birth to his son. Cintron was able to watch the birth over a four-hour webcast from Maimonides Medical Center in Brooklyn, New York. As reported in the *New York Daily News,* this soldier stationed in Iraq heard the baby's heartbeat and got to see his son in New York even before the birth mother, as they put the webcam up to the side of the baby. (A copy of the article is attached)

This is the power of broadband. It's up to us to make sure that every American has access to the power of this technology. Speed Matters.

Thank you.

ATTACHMENT A

July 11, 2008

Hon. DANIEL K. INOUYE,
Chairman,
Senate Commerce Committee,
Washington, DC.

Hon. TED STEVENS,
Vice Chairman,
Senate Commerce Committee,
Washington, DC.

Hon. JOHN D. DINGELL,
Chairman,
House Committee on Energy and Commerce,
Washington, DC.

Hon. JOE BARTON,
Ranking Member,
House Committee on Energy and Commerce,
Washington, DC.

Dear Chairman Inouye, Vice Chairman Stevens, Chairman Dingell and Ranking Member Barton:

The undersigned organizations write to express our strong support for Congressional action to promote greater availability and adoption of broadband high-speed Internet services.

[12] Information on Connect Kentucky available at *http://www.connectkentucky.org*.

The leading bills pending before Congress (S. 1492, the Broadband Data Improvement Act and H.R. 3919, the Broadband Census of America Act of 2007) would improve information-gathering about current broadband deployment and assist in targeting resources to areas in need of such services. A recent FCC order requires more focused broadband data collection from broadband providers but does not address other important broadband mapping elements contained in the pending legislation.

We believe Congress should adopt legislation this year that provides Federal Government support for state initiatives using public-private partnerships to identify gaps in broadband coverage and to develop both the supply of and demand for broadband in those areas. The ability to accelerate deployment and adoption by bringing together government, broadband providers, business, labor, farm organizations, librarians, educators, and consumer groups in public-private partnerships is greater than the ability of these diverse players standing alone.

Adopting a national policy to stimulate subscription where it is already available, and deployment where it is not, could have dramatic and far-reaching economic impacts. For example, a Connected Nation study released February 2008 estimated the total annual economic impact of accelerating broadband across the Nation to be more than $134 billion. In addition to the $134 billion total benefit, the study found that increasing broadband adoption by another 7 percent could result in:

- *$92 billion* through an additional 2.4 million jobs per year created or retained;
- *$662 million* saved per year in reduced healthcare costs;
- *$6.4 billion* per year in mileage savings from unnecessary driving;
- *$18 million* in carbon credits associated with 3.2 billion fewer pounds of CO_2 emissions per year in the United States; and
- *$35.2 billion* in value from 3.8 billion more hours saved per year from accessing broadband at home.

We cannot afford to let another year go by without adopting policies that will stimulate the economy in such ways, while expanding use of the networks that are already deployed and providing broadband in previously underserved areas. That is why we urge you to work in a bipartisan, bicameral way to enact Federal legislation this year.

Thank you for your timely consideration of this important issue.

Sincerely,

AT&T
Alliance for Public Technology
American Association of People with Disabilities
American Library Association
Cablevision
Charter Communications
The Children's Partnership
Comcast
Communications Workers of America
Connected Nation
Cox Communications
EDUCAUSE
Embarq
Independent Telephone & Telecommunications Alliance
Information Technology Industry Council
International Brotherhood of Electrical Workers
Internet Innovation Alliance
NIC, Inc.
National Cable and Telecommunications Association
National Farmers Union
The National Grange
National Rural Health Association
Organization for the Promotion and Advancement of Small Telecommunications Companies
Qwest
Time Warner Cable
U.S. Cattlemen's Association
U.S. Chamber of Commerce
United States Telecom Association
Verizon
Western Telecommunications Association
Windstream

ATTACHMENT B

New York Daily News Writers—Thursday, July 10, 2008, 4.58 PM

MARINE SEES BIRTH, THANKS TO 6,000-MILE WEB HOOKUP

By Jenny Merkin and Owen Moritz

He was 6,000 miles from Brooklyn, but Marine Lance Cpl. Michael Cintron got a glimpse of his newborn son before his wife did.

"Hi. I'm your daddy," Cintron announced to his minutes-old son. "Look, your nose is squishy."

In a remarkable four-hour Web cast from a maternity ward at *Maimonides Medical Center,* mom *Jeannine Cintron's* delivery of son *Michael James Cintron* was beamed clear across ocean and land to his 26-year-old father in Iraq.

The baby weighed in at 7 pounds, 3 ounces and the new dad weighed in with a fatherly shriek: "Look! He's looking at me!"

In *Maimonides'* first ever video conference of a baby delivery, Cintron first heard the baby's heartbeat.

"What's that knocking sound I hear," laughed the *Staten Island* native.

Then the camera followed as Jeannine was wheeled into an operating room to undergo a C-section on Tuesday. That's when the Marine got to see the baby emerging from his wife's womb.

"He got to see our son first from 6,000 miles away," Jeannine marveled. "He actually saw the baby before I did. They put the Webcam up to the side with the baby."

The video conference was initiated by a nonprofit organization called Freedom Calls, which arranged with Maimonides for covering little Michael's birth.

The proud parents were still in a state of disbelief Wednesday, not only about the birth of their first child, but the electronic wizardry that gave dad a real-time maternity room experience.

"This is surreal," Jeannine said. "I didn't expect this. I feel so blessed. There are so many women in my situation that don't have this.

"I didn't know what I was in for," she added. "It's only my first baby."

"Pretty much throughout my entire pregnancy, I was most sad about doing it [birth] by myself," she went on. "Delivering by myself was horrifying. No, he couldn't hold my hand, but he was there for hours."

Jeannine, 25, who works in sales for Clear Channel and hails from *Sheepshead Bay,* and Michael, 26, a sanitation worker from Staten Island assigned to First Supply Battalion S6, were married last year.

The couple found out Michael was going to Iraq only a few weeks after they learned Jeannine was pregnant.

"I think I'll keep him [the baby]," the ecstatic mom said.

For more information on how to donate to the *Freedom Calls Foundation,* visit *www.freedomcalls.org*

The CHAIRMAN. I thank you very much.

I would like to advise the panel that their full statements will be made part of the record, and if you wish to add, please feel free to do so.

Next we have Mr. Jonathan Linkous.

STATEMENT OF JONATHAN D. LINKOUS, CHIEF EXECUTIVE OFFICER, AMERICAN TELEMEDICINE ASSOCIATION

Mr. LINKOUS. Thank you, Mr. Chairman. I am here as the CEO of the American Telemedicine Association. We are a national and international organization composed of physicians, hospitals, providers of health care, as well as telecommunications companies and others around the country, around the world that are providing telemedicine to patients no matter where they live.

My thoughts on broadband this morning are really shaped around my own personal experience. I came to Washington, D.C. working with the Appalachian Regional Commission. My mom and dad were both born in the Appalachian Region and suffered from the isolation. When President Johnson started the Appalachian Commission, we realized the Federal Government could best help those people by building a highway system and opening up the isolation of Appalachia by building those highways to give them access to education and jobs and health care. The highways of today are communication lines, and it is just as important to provide high-speed telecommunications, broadband, to open up the isolation of a lot of Americans, no matter where they live.

Twenty years ago, telemedicine was largely composed of federally funded grants and demonstrations that provided access to rural

clinics linking them together with the major hospital systems. A good example is what we have certainly in Hawaii, as well as Alaska, and pretty much every state in the country. We now have about 200 hospital-based networks reaching out to 3,000 sites across America.

The rural health care program, as part of the Telecommunications Act that was established by Senator Rockefeller and Senator Snowe, has certainly been a tremendous help to establishing these hub and spoke networks. The program probably should be revisited and expanded as we are today, but nevertheless, it is really vital to those people that have it. And no other state has benefited more, I might add, than the state of Alaska, which has had tremendous access to those programs and has shown really what can be done.

But having built those networks, we now need to ensure that their interconnections are available on a continuous basis, that we have the broadband networks that connect them, as well as to the patients that they serve.

The second stage of telemedicine is moving into the home. We now have about 80,000 Americans that are receiving their vital signs directly into their home, transmitting those to health care professionals, people with chronic diseases who are being managed and monitored on a daily basis. As a matter of fact, people with cardiac devices or with the heart-implantable pacemakers—there are almost a million Americans that are now having those monitored remotely using telecommunications lines. Many of these are based on plain old telephone service, but we have new emerging applications that are now going to require broadband.

So today, we are entering really the third stage of telemedicine that moves beyond the hospitals and clinics and even moves beyond the home. And these are using applications that are being developed actually by the patients themselves and by the doctors. They allow users to track their own vital signs, to go on a weight loss diet, to track for drug interactions.

A good example is the new iPhone that was introduced this year now has over 100 applications dealing with health care. The number one health care application is something called Hippocrates, which your physician might use if you go there to have your drug interaction checked with other drugs. Now consumers are downloading it into their own phone and using it themselves.

There are a lot of other applications that allow doctors to use cell phones to transmit medical MRIs or other types of images. They will send tissue samples by video or single images using the phone lines to pathologists. It is kind of amazing what is going on.

Online video game support like Second Life now has major support groups for diabetes, alcoholics, people with various types of diseases. And it is really expanding as a part of health care.

I would like to share a personal story to really illustrate what this broadband has meant to people and really starting very personally, my own sister Diana. She was diagnosed with stage 3 breast cancer, and she is 60 years old. She lives alone. She is about 30 miles outside of Washington in a rural area. And since getting her diagnosis, Diana has relied on access to the outside world via

telecommunications. She has no car. She is very isolated where she is.

She looks up the complicated terms that her doctors give her by going on the Internet. She logs into the American Cancer Society site to find out what types of applications and where she can go. She relies on friends that she has developed through her own online community as part of the video activities that she is involved in, which is now her personal support group. She has an online blog in an effort to reach out to others, and she even uses the Internet site to occasionally order groceries from a delivery firm.

Broadband has allowed my sister to get help with her health care. It has certainly reduced her costs for what she has. And it has improved her life. I would say broadband is my sister's lifeline and it is extremely important for her well-being.

This is what I call telemedicine 3.0. It is where we are today for some Americans, but not all Americans.

Other countries, as the previous testifier just mentioned, have had a lot more experience and progress than we have. I note that Canada and several Scandinavian countries have established specific national goals. Certainly Japan has done an excellent job, and Korea. I was just in Korea 2 months ago looking at their system, and I was very impressed with what they have been able to do.

But we are finding actually even countries in Africa have leapt ahead of the United States in terms of providing cell phone wireless applications and broadband deployment. And they are having access to certain applications that are own citizens do not have these days.

So it is really important whether someone is living in the remote islands of Hawaii or if they are living in a remote area of Alaska, if they are on the plains of west Texas, or even if they are downtown in Washington and isolated at home, if they are homebound, they all need access to the communications, all need access to the services just the way my mom and dad did in Appalachia. So we cannot concentrate on building concrete and blacktop everywhere, but we can use telecommunications to open up their lives. So I think that should be a priority for this Congress, as well as the next Congress and the next Administration.

So finally, Mr. Chairman, I want to thank you for your support over the years for the expansion of telemedicine and the support of other Members of this Committee. It has really benefited for what we have, and I think the future holds even more promises. Thank you very much.

[The prepared statement of Mr. Linkous follows:]

PREPARED STATEMENT OF JONATHAN D. LINKOUS, CHIEF EXECUTIVE OFFICER, AMERICAN TELEMEDICINE ASSOCIATION

Mr. Chairman:

I am grateful for the opportunity to speak to this Committee about the importance of broadband networks for healthcare. I am the CEO of American Telemedicine Association. ATA promotes telemedicine, sometimes called telehealth or telecare, and resolves barriers to its deployment. Members of ATA include physicians, administrators and other health providers as well as hospital networks and suppliers of telecommunications and technology used in telemedicine.

My thoughts on broadband are shaped by my personal experience. My mother and father were born and raised in Appalachia. So, it's no surprise that when I came to Washington, D.C. in 1975, I went to work for the Appalachian Regional Commis-

sion. At the Commission, I learned the importance of opening up isolated rural communities by the construction of a networked highway system throughout the Appalachian Mountains providing access to education, jobs and health care. The highways of today are located providing healthcare through telecommunications technology on the wired and wireless communications lines that open up the isolation of Americans, no matter where they live.

For the last two decades telemedicine has been evolving in stages. Each stage has dramatically changed the way we get healthcare and changed the need for broadband networks.

Twenty years ago telemedicine was largely composed of federally funded demonstration grants and small projects that connected large hospitals with rural clinics to provide access to basic medical services and specialty care where it wasn't previously available. Since then, these first stage initiatives blossomed into 200 hospital-based networks reaching out to over 3,000 sites across America. The rural healthcare program established by Senators Olympia Snowe and Jay Rockefeller in the 1996 Telecommunications Reform Act targeted the growth of these hub-and-spoke networks. Although the program has been smaller than originally expected, for Americans living in some of the most remote parts of the country it has allowed them access to healthcare. Having built these networks, we now need to ensure their use by interconnecting them and ensuring we have affordable broadband services to all healthcare centers as well as having physicians fully reimbursed when they use telemedicine to provide care.

The second stage of telemedicine provides healthcare directly into the home through the use of remote monitoring for those with chronic ailments. Today, almost 80,000 Americans are having their vital signs remotely monitored by a healthcare professional, helping them to manage their disease and providing an early warning for any complications. Over a million patients are using home-based remote monitoring for their heart rhythms or check up on their pacemakers. This is saving thousands of lives and saving millions of dollars by keeping people out of emergency rooms, hospitals and nursing homes and allowing them to stay in their own homes and communities.

Because many of these home based monitoring services use plain old telephone service for their connections, for several years I was not convinced that broadband connections to the home was a priority for telemedicine.

However, today, we are entering the third stage of telemedicine, moving beyond the walls of hospitals and clinics and even beyond the home. In many cases, this is a consumer-based initiative, piggybacking on popular PC programs and using cell phones to help the patients help themselves. In fact, these remote healthcare applications are often designed and developed by patients and caregivers. They allow users to track their own vital signs, get information about drug interactions or start on a weight loss diet. There are already over 100 health-related applications available for download just for the new Apple iPhone. Other applications allow physicians to use their new cell phones to look at diagnostic images such as an MRI or transmit images of tissue samples to pathologists. Online and video game support groups for patients have exploded. There are active healthcare support groups in the video game Second Life dealing with alcoholism, diabetes, and domestic violence among others. These are not novelty applications. They are an emerging part of healthcare delivery around the world and it is having a major impact on how our life and children's lives are lived.

I want to share a personal story to illustrate the impact of this stage of telemedicine. About 3 months ago, my sister, Diana, was diagnosed with stage three breast cancer. She is over 60, lives alone, without a car, about 30 miles outside of Washington, D.C. Since getting her diagnosis, Diana has relied on her access to the outside world via telecommunications in a variety of ways. She looks up the complicated terms used by her doctors using the Internet and logs on to the American Cancer Society's site to find out about the latest advances in treatment. She relies on friends she developed and communicates with through an online community as part of her own personal support group. She has started an online blog in an effort to reach out to others. She uses an Internet site to occasionally order groceries from a local delivery firm. Broadband has allowed my sister to access help for her health. It has certainly reduced her costs. And, it has improved her life. Broadband is my sister's lifeline.

This is telemedicine 3.0 and it's a reason why we need to ensure all citizens of the U.S. have access to broadband communications no matter where they live and no matter where they travel.

Other countries, notably Canada and several Scandinavian countries have established specific national goals toward universal deployment of high speed telecommunications. Even underdeveloped nations are leaping ahead of the United

States in deploying wireless broadband. Congress and the next administration should establish goals to ensure the availability of broadband telecommunications to every business, every home and every citizen in America.

Whether someone is living on a remote island of Hawaii or on the plains of west Texas or in an urban area living homebound and alone, they are just as isolated as the people living in the hollows of Appalachia. We can't use concrete or blacktop to build highways to everyone but we can use telecommunications to open up their isolation and help them build a better life.

Finally, I want to thank the Chairman for your strong support and your leadership over the years in getting important legislation passed that has helped the deployment of telemedicine. I will be happy to answer any questions you may have.

The CHAIRMAN. Thank you very much.

May I now call on Dr. Mayor?

STATEMENT OF MARA MAYOR, PH.D., MEMBER, BOARD OF DIRECTORS, AARP

Dr. MAYOR. Chairman Inouye, Members of the Commerce Committee, I am honored to appear here before you this morning on behalf of AARP to provide our perspective on the question of why broadband matters.

I am Mara Mayor from Bethesda, Maryland and a member of AARP's Board of Directors. In my professional career as an educator, I have focused on extending learning opportunities, particularly to adults, in both formal and informal settings, especially through the creative uses of technologies.

Broadband matters to AARP's 40 million members. High quality broadband networks have the potential to make the world more accessible to people over age 50 and, in turn, to enable them to contribute in many ways.

Let me just touch on three key areas where broadband can make a major difference: livable communities, work opportunities, and lifelong learning.

Creating livable communities is an important policy goal for AARP. Livable communities seek to combine diverse and affordable housing, adequate mobility options, employment opportunities, entertainment, and supportive services that allow people of all ages to remain independent, active, and engaged. Livable communities are connected communities. We tend to think of community in terms of the immediate neighborhood, but in fact, our definition is being transformed by broadband to include not only the people down the block, but groups of like-minded people who may live anywhere.

While all have a fundamental need to connect with one another, staying connected is particularly important for older adults, and we need to abandon our outdated image of older adults. Most, regardless of chronological age, are vibrant and eager to live well and enjoy life. They often find that the later years present more potential opportunities for enhanced working, learning, and social contact than ever before. And with the 50-plus population projected to increase by 21 percent by 2020, which is around the corner, and those over 65 growing by 33 percent, all communities need to find ways to keep this growing population connected and productive.

Connectivity also makes it easier, as you have just heard from Mr. Linkous, to monitor and maintain our health. Telemedicine, support monitoring devices, interactive video, and home health care

all become more viable options for consumers with broadband in their home and particularly benefit those with limited mobility or not well enough to travel.

AARP views broadband Internet technology as the 21st century bridge and facilitator for enhanced connectivity and successful aging. It believes that the goal of Federal policy should be to ensure sufficient or requisite connectivity, which has been defined as maintaining contact at the rate, richness, and intensity that we desire for a given task or social outcome.

High quality broadband networks will help many older Americans achieve that requisite connectivity. Broadband allows for greater information carrying capacity and speed than earlier networks and really equally important, enables real-time interaction and more precise, expressive communication almost of the kind that you have a in a face-to-face, in-person meeting. With it, we can have livable communities with people staying in their homes, which we know is where they want to be, in which we are truly connected.

Creating work opportunities is a second area where access to broadband can make a huge difference. Many of AARP's 50-plus members are still active in the work force, and they find telecommuting very attractive with the high-speed broadband connection. Trends indicate that people will work much longer as they continue to mature. Access to broadband makes it easier to have flexible work schedules, to work part-time where that is appropriate, to take on consulting, and most important to continue to earn a living.

And in addition, access to affordable broadband can make telecommuting an option for volunteer work which is so important to our nonprofit institutions and the millions they serve.

A third key area of importance to people over 50 is access to distance learning. Years ago, I was Director of something called the Annenberg Projects at the Corporation for Public Broadcasting, and in those days—it was the early 1990s—we pioneered technology-based distance learning which initially meant using television and radio to reach people.

And then with the Internet came the possibility for true interactivity between faculty and students and among students. With broadband, distance learning can occur at convenient times and places and with greater visual enhancement than previously available, especially for those with jobs or disabilities or family care responsibilities that make it difficult for them to travel to a classroom. Lifelong learning is important in so many ways. It keeps us mentally stimulated, opens new doors, and enables us to keep our skills and knowledge base relevant in a high-tech world. Again, broadband is the key.

However, despite the bright promise of the Telecommunications Act of 1996, as well as know, universal access has not been fully realized. Simply put, the digital divide for older Americans remains far too wide in just two statistics. Only 50 percent of adults aged 50 to 64 and 19 percent of those 65 and older have broadband in their home, and only 38 percent of rural adults have broadband at home compared to 57 percent for urban adults and 60 percent for suburban adults. We have to do better. A new public policy toward

broadband is needed to stimulate the development of universally available, affordable, and high-quality broadband.

AARP would encourage Congress to pass broadband mapping legislation. Senate bill 1492 and House-passed legislation 3919 will help local communities and States assess their broadband inventory. Broadband mapping will collect accurate data that demonstrate current deployment, forecast deployment milestones, and identify areas where follow up measures are required. The information that these bills provide is extremely important and, as you all know, is needed now.

Mr. Chairman, helping people aged 50 and older stay connected, informed, and engaged is central to AARP's commitment to its members. The potential of affordable broadband technology can greatly enhance the ability of older Americans to remain independent, in their homes, in their communities, work longer in settings that are supportive, and continue to learn and grow.

Thank you for this opportunity to speak to you this morning.

[The prepared statement of Dr. Mayor follows:]

PREPARED STATEMENT OF MARA MAYOR, PH.D., MEMBER, BOARD OF DIRECTORS, AARP

Chairman Inouye, Ranking Member Hutchison, and Members of the Commerce Committee, I am Mara Mayor from Bethesda, Maryland. I am a member of AARP's Board of Directors. I am honored to appear before the Committee this morning on behalf of AARP [1] to provide our perspective on the question of "Why Broadband Matters."

Broadband matters to AARP Members. High-quality broadband networks have the potential to make the world more accessible to persons over age 50, providing convenient pathways to the economic and social activities that are not only vital for leading comfortable and meaningful lives, but also for fostering and sustaining livable communities. Creating livable communities is an important policy goal for AARP. More than just a concept, livable communities seek to combine diverse and affordable housing, adequate mobility options, employment opportunities, entertainment and supportive community services to allow persons of all ages to remain independent, active and engaged.

Livable communities are connected communities. While all people have a fundamental need to connect with one another and be part of a broader community, staying connected is particularly important for older adults. "Gerontologists identify active engagement with life, which involves continued involvement with productive activities and maintenance of social ties, as a critical component of successful aging." [2] Older adults often find that later life presents more potential opportunities for enhanced working, learning and social contact than ever before. And with the age 50 and older population projected to increase by 21 percent by 2020, and those over 65 growing by 33 percent, all communities need to find ways to keep this large and growing senior population connected and engaged.[3]

AARP views broadband Internet technology as the 21st century bridge and facilitator for enhanced connectivity and successful aging. Available and affordable broadband can overcome many critical limitations for older users that are inherent in current communications technology. Communicating through telephone calls or e-mails does not involve the physical presence that occurs with in-person meeting and thus does not convey visual and physical cues, such as facial features or body language, that not only enrich conversations, but convey critical information. For exam-

[1] AARP is a nonprofit, nonpartisan membership organization that helps people age 50+ maintain independence, choice, and control in ways that are beneficial and affordable to them and to society as a whole. With 40 million members, it is the largest organization representing the interests of Americans age 50 and older and their families.

[2] Rowe, J.W., Kahn, R.L. (1988), *Successful Aging,* New York: Random House, define successful aging as the ability to maintain three key behaviors or characteristics: (1) low risk of disease and disease related disability, (2) high mental and physical function, and (3) active engagement with life.

[3] Beyond 50.05: A Report to the Nation on Livable Communities, "Creating Environments for Successful Aging.

ple, doctors trying to diagnose or treat a patient by telephone would not benefit from important visual cues, such as the grimace of a patient in pain or the lack of eye contact from a depressed patient. E-mails are often open to misinterpretation because of the inherent difficulty in conveying emotion or tone in written communication. In addition, sending an e-mail does not guarantee an immediate response, making it an ineffective tool for communicating urgent or emergency messages.

All persons should have the means to stay connected to an extent that ensures independence and quality of life. In this regard, the goal of Federal policy should be one of assuring sufficient or requisite connectivity: which is "the state of having robust and reliable communication and/or transportation modes, with operable alternative work-around options, so that contact may be initiated or maintained at the rate, richness, and intensity that we desire for a given task or social outcome."

High-quality broadband networks will help many older Americans achieve "requisite connectivity". Broadband allows for greater information-carrying capacity and speed than earlier networks and enables real-time interaction and more precise, expressive communication, almost of the kind that can occur during an in-person, face-to-face meeting.[4]

Telemedicine, support monitoring devices, interactive video and home health care all become more viable options for consumers with broadband, particularly persons with limited mobility or those not well enough to travel. In a recent survey of Older Americans age 65 and over, 98 percent of respondents agree that they like to know as much as they can about their health conditions regardless of their demographic characteristics. Furthermore, almost all (96 percent) of respondents agreed they would like to help their doctor monitor their health. More than a majority of respondents agreed they wish their doctor had a device that allows him/her to perform a variety of standard telepharmacy tasks such as checking medication history, prescription drug benefits, insurance coverage of specific medications and electronic forwarding of prescriptions to their pharmacy to be filled before travel for pick-up.[5]

Distance learning is not only facilitated with broadband, but can be conducted with greater personal convenience and with greater visual enhancement than previously available. This is especially true for persons with jobs, disabilities or family care responsibilities that make it difficult to travel to a classroom.

Many of AARP's age 50+ members are still active in the workforce and find telecommuting very attractive with a high-speed broadband connection. Trends indicate that people will work much longer as they continue to mature:

- According to an AARP study on work and careers, 69 percent of workers age 45 to 74 plan to work in some capacity during their retirement years.
- Many, however, want to work on different terms, with more flexibility and autonomy, than they did during their earlier careers.
- In fact, 70 percent of workers age 45 to 74 say they are looking for ways to better balance their work and personal lives, and 41 percent report that the ability to work from home is an absolutely essential part of their ideal job.[6]

Not only can affordable access to broadband Internet make telecommuting a more realistic option for older workers, it can enhance opportunities for volunteer work as well. For organizations facing shortages of volunteers, virtual volunteer with broadband technology will allow greater numbers of people with time constraints, physical limitation or home care obligations to engage in needed charitable activities with organizations in their own communities and around the world.

Where broadband is widely available, innovative uses of videoconferencing can provide older consumers with unlimited opportunities to expand their civic and social ties and enrich their lives.

However, despite the bright promise of the Telecommunications Act of 1996, universal access of advanced telecommunications services has not been fully realized. With all of the research and potential benefits of high-quality broadband Internet technology, our Nation that invented the Internet is losing its place as a leader in the deployment of broadband Internet technology. Simply put, the digital divide for older Americans remains far too wide:

- Thirty-eight percent of rural adults have broadband at home, as compared with 57 percent for urban adults, and 60 percent for suburban adults.

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[4] AARP Public Policy Institute, Connecting for Successful Aging: Promoting Broadband for the Opportunities and Challenges of Later Life, Chris A. Baker.

[5] AARP "Healthy @Home", Knowledge Management. Linda L. Barrett, Ph.D.

[6] AARP "Healthy @Home".

- Twenty-five percent of households with income under $20,000 per year have broadband at home, as compared to 85 percent of households with income greater than $100,000 per year.
- Fifty percent of adults age 50 to 64 and 19 percent of those 65 and older have broadband in their home.[7]

A new public policy toward broadband is needed to stimulate the development of universally available, affordable and high-quality broadband.

A new public policy for broadband deployment should incorporate the following principles:

1. Greater promotion of broadband adoption, especially among the older and underserved populations;

2. Promotion of open and standardized broadband platforms;

3. Transparency and accountability that ensures the collection and public reporting of timely and accurate data on the quality of the broadband technology being deployed, the prices at which the broadband technology is available, and the interoperability of networks and technologies; and

4. Increased use of broadband mapping to ensure the efficient utilization of resources to achieve rapid advance of broadband deployment.[8]

AARP encourages Congress to pass broadband mapping legislation. Senate bill 1492, the Broadband Data Improvement Act passed by this Committee and House-passed legislation H.R. 3919, the Broadband Census of America of 2007, will help local communities and states assess their broadband inventory. Broadband mapping will collect accurate data that demonstrate current broadband deployment, forecast deployment milestones and identify areas where follow-up measures are required. The information that these bills provide is extremely important and is needed now if all American are to realize the promise of broadband technology.

Mr. Chairman, helping people age 50 and older stay connected, informed and engaged is central to AARP's work of encouraging positive social change and fostering more livable communities. The potential and possibilities of affordable broadband technology are unlimited. Increased broadband deployment can greatly enhance the ability of older Americans to remain independent in their communities, providing convenient access to the services and activities they need to address the complexities of aging and lead more comfortable and meaningful lives.

Thank you.

The CHAIRMAN. Thank you very much.

May I now call upon the Missouri State Librarian, Ms. Conroy?

STATEMENT OF MARGARET M. CONROY, MISSOURI STATE LIBRARIAN, ON BEHALF OF THE AMERICAN LIBRARY ASSOCIATION (ALA)

Ms. CONROY. Thank you, Mr. Chairman, Members of the Committee. It is with great pleasure that I submit this testimony on behalf of the American Library Association, the ALA. I am Margaret Conroy. I am the State Librarian of the State of Missouri, and I am also a member of ALA, which is the oldest and largest library association in the world.

Today I am here to talk with you about the importance of broadband Internet in libraries and to share with you how the residents of the "Show Me" state are using broadband through their public libraries.

Some had predicted that the rise of the Internet would lead to the demise of the public library, but as Missouri native Mark Twain wrote, "Reports of my death are greatly exaggerated." Libraries are very lively places and they are at the forefront of the information age. By providing Internet access to the general public, libraries have become the social and economic hubs of their com-

[7] AARP "Aging in Internet Time—Harnessing the Benefits of Broadband for Older Americans".
[8] AARP "Aging in Internet Time".

munities. They are often the only place Internet access is provided in their community, and especially now during difficult economic times, use is growing ever higher. Broadband technologies play an increasingly vital role in enabling public libraries to provide their essential services.

Current research shows that while computer use has increased substantially, many homes still do not have computers or Internet access. Libraries are working to close this digital divide. Nationwide 73 percent of all public libraries report they are the only provider of no-fee Internet access in their communities, and this statistic rises to 83 percent in rural areas.

How do our patrons use the Internet? 78 percent of libraries reported that education resources and data bases purchased for K–12 students are their most important service, followed closely by job hunting and e-government services and information.

Librarians can also share with you many stories about how libraries are increasingly involved with emergency preparedness and disaster recovery in conjunction with local and State governments. For example, residents of Marble Hill flocked to their library this spring to file FEMA paperwork when their homes were flooded. Even though the library had also been flooded by the rise of a local creek, it remained open to provide access for their distressed residents in Marble Hill.

Some other stories, from a librarian in Nevada, Missouri. I have been moved when I helped a wife who needed to instant message her husband in Iraq or a grandmother who, for the first time, saw her grandchild on the Internet, or a child who needed to find a Martin Luther King, Jr. speech. None of these people have computers in their homes.

From McDonald County, which is down by the Arkansas border: During a 3-hour period last week, I encountered five different languages at one time, helped Somali refugees fill out citizenship forms, observed online college courses being taken, and helped an older gentleman send an e-mail to his son in the military in Japan.

From Wright County: In our rural community, the only public access to broadband is the library. Business people come in to research and order products because it takes them less time to use the library's connection than it does to use the connection at their businesses.

From Warrensburg: The Social Security office in Warrensburg closed last year. Connections are faster at the library, so they can assist those who cannot travel the 30 miles to the nearest Social Security office or those who have no computer or decent connection speed at home.

From Morgan County: People come in to apply for jobs online on a weekly basis. More local companies, as well as chains like Target, Lowes, and WalMart now require online job applications. Truckers are even applying for jobs online now.

From Columbia, Missouri: We are opening our computer training lab on Friday mornings for Refugee and Immigration Services to help their clients. We also have added a special time each week in the computer training center to help people with online job applications and resume writing. This is in addition to normal classes and

partnering with AARP to provide electronic tax filing for senior citizens and low-income members of the community.

From Oregon County: Internet access means that our local college students can work online, communicate with their professors, e-mail their assignments, take classes, and compete on a level playing field with students from metropolitan areas.

You can see from just these examples why librarians well understand the essential nature of the importance of broadband. Not only have librarians embraced the digital age, we also maintain our more traditional services, services that are now in ever greater demand because technology has made them better known and easier to share.

While our efforts to enhance Internet connectivity have been incredibly rewarding, we need to do more. 57 percent of public libraries report that their broadband connections are inadequate to serve growing demand. Broadband needs for a library are not the same as for home users. Libraries support simultaneous multiple users both in the building and people connecting from home or their offices. In Missouri, we are lucky to have MOREnet which helps provide Internet connectivity for public education in libraries. And you can read more about MOREnet in my written testimony.

Libraries across the country truly appreciate the foresight of this committee in originating the E-rate discount program. Thank you so much. The E-rate program has been an incredibly valuable resource that enables many libraries to afford telecommunications and Internet services. The program is working. Without the E-rate, many of our libraries could just not afford the levels of connectivity that they need.

There are some adjustments to the program that would encourage increased library participation that we have proposed to the FCC, and we hope that the commission will move forward on our recommendations in the near future.

Mr. Chairman, I cannot say strongly enough how indebted we are to your leadership and to this Committee for the enormous progress we have made in the last decade. On behalf of the American Library Association and the libraries in the State of Missouri, we look forward to working closely with you in addressing the issues of expanding broadband deployment and meeting the telecommunications needs of all Americans. Thank you.

[The prepared statement of Ms. Conroy follows:]

PREPARED STATEMENT OF MARGARET M. CONROY, MISSOURI STATE LIBRARIAN, ON BEHALF OF THE AMERICAN LIBRARY ASSOCIATION (ALA)

Chairman Inouye, Ranking Member Hutchison, Members of the Committee, it is with great pleasure that I submit this testimony on behalf of the American Library Association (ALA). My name is Margaret Conroy, and I am the State Librarian for the great State of Missouri. I am also a member of the American Library Association (ALA), the oldest and largest library association in the world with 66,000 members who are primarily school, public, academic and some special librarians, as well as trustees, publishers and friends of libraries.

I am here to share with you how the residents of the "Show Me" state are using broadband (and too-often slower connectivity) through our public libraries. You will see that our experiences in Missouri track closely with research findings in the report, *Libraries Connect Communities: Public Library Funding & Technology Access*

Study 2007–2008,[1] released just 2 weeks ago by the American Library Association and the Information Institute at the College of Information at Florida State University. This report assesses public access to computers, the Internet and Internet-related services in public libraries across the United States, and gauges the impact of library funding changes on connectivity, technology deployment and sustainability. Chairman Inouye, I request that the Executive Summary of this report be submitted into the record.

Broadband technologies play an increasingly vital role in enabling public libraries to provide essential services to all, especially important for the "have-nots." Because so many people do not have broadband, libraries are trying to meet all of the new demands that our patrons need because we are the only institution that they can come to for access and information.

Some naysayers predicted that the rise of the Internet would lead to the demise of the public library. But as Missouri native Mark Twain wrote, "reports of my death are greatly exaggerated." Libraries are now very lively places and at the forefront of the "Information Age." By providing Internet access to the general public, public libraries have become the social and economic hubs of their communities, often times providing the only Internet access for many low-income and elderly people, students, job seekers, immigrants, travelers, and many others.

A Pew Foundation study on how Americans search for information released in December 2007 shows that people who used the Internet were more likely to use the library than people who do not use the Internet.[2] This was true regardless of income. This study also revealed significant new information on who is using our libraries. Traditionally, the profile of the library user was a middle-aged female. This study shows a dramatic shift in that profile to young people ages 18 to 30. This shift indicates two current realities about our libraries: (1) libraries are successful in offering technology that attracts younger users; and, (2) it charges libraries with keeping pace with emerging technologies to continue to support the information needs of young people as they grow into adulthood.

Libraries offer technology to link communities around the country and provide users access to information through state, regional, national and international networks. Librarians can also share with you the many stories about how libraries are increasingly involved with emergency preparedness and disaster response in conjunction with local governments and other organizations. Many libraries are part of statewide networks that provides enriched content data bases and open access to resources, and services that our local libraries just cannot afford on their own.

However, while computer use has increased substantially in the United States, many American households still do not have computers or Internet access in their homes. Libraries are working to close this "digital divide" in many of our Nation's distressed communities by providing no-fee, public access to computers and the Internet. Nationwide, 73 percent of all public libraries report they are the only provider of free Internet access in their communities. In rural areas, the role of the library is even more critical as 83 percent of libraries are the only no-fee Internet provider.

To demonstrate the pervasiveness of public libraries in America, let me present this comparison: There are more public libraries in the U.S. than McDonald's restaurants—a total of 16,549 public libraries, including branches. Statistics also show that 63 percent of adults in the U.S. have public library cards.[3] Furthermore, nationwide, there are now 1.3 billion visits per year to our Nation's public libraries. Over 2 billion items were checked out in 2006, when ALA conducted a poll that found that 92 percent of respondents expect libraries to be needed in the future, despite the increased availability of information on the Internet.[4]

Why have libraries remained so essential? Part of the answer is that public libraries across the country have installed thousands of computers for the general public—some with help from organizations such as the Bill and Melinda Gates Foundation, and also with major investment from local governments and creative budgeting by library administrators. The Federal "E-rate" program, which originated in this very Committee and for which libraries and library patrons are enormously grateful, has played a tremendous role in expanding the ability of public libraries to connect

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[1] Bertot, John Carlo, *et al. Libraries Connect Communities: Public Library Funding & Technology Access Study 2007–2008.* American Library Association. September, 2008.

[2] Leigh Estabrook, Evans Witt, and Lee Rainee, *Information Searches That Solve Problems: How people use the Internet, libraries, and government agencies when they need help,* (Pew Internet and American Life Project, December 30, 2007). Available on the Internet at *http://www.pewinternet.org/PPF/r/231/report_display.asp.*

[3] American Library Association. *@ your library: Attitudes Toward Public Libraries Survey 2006,* p. 1.

[4] *Ibid.,* p. 12.

patrons to the Internet connections. Public librarians provide training to educate users on how to use computer applications and the Internet. Furthermore, our studies show 98.9 percent of public libraries now provide Internet public access at no-fee, and 65.9 percent of public libraries also provide wireless Internet access for those patrons who bring their own laptop computers.[5]

Library access is especially important in rural areas and for low-income families. Approximately 38 percent of rural households have broadband. The percentages are higher in urban and suburban: 57 percent and 60 percent respectively. Among households with incomes over $100,000, 85 percent have broadband access. Among households with incomes $20,000 and under, only 25 percent have broadband service.[6]

The ALA-Florida State report found that America's 16,543 public libraries are leveraging technology to help students of all ages succeed in school and support lifelong learning. More than 83 percent of libraries now offer online homework resources, including live tutors and collections of reliable Web sources—an increase of 15 percent in 1 year. Libraries also reported significant increases in the number of audiobooks and podcasts (33 percent increase), videos (32 percent increase), e-books (13.5 percent increase) and digitized special collections (13 percent increase). As Americans are changing the ways they meet their educational, entrepreneurial and entertainment needs, libraries are changing with them and ensuring access for patrons in our libraries as well as for remote access users.

How do our patrons use the Internet? The research shows:

- 78% of the libraries reported that education resources and data bases purchased for K–12 students are their most important service. Since over 90 percent of school districts are assigning homework that involves Internet usage and school library media centers are closing across the country, this priority is not surprising.
- 62% reported job-hunting as another high priority. Given our challenged economy, and knowing that the majority of the top-100 retailers only accept electronic and online job applications, you can see why this is so important. Libraries offer access to data bases with job listings, training for resume development and interviewing techniques—all necessary 21st century skills to get that new job.
- 55% of libraries reported that access to government information has become another high priority.[7] We know that, at every level of government, agencies increasingly require online-only interactions with residents for information, applications, appointments, and more.

Note also the increasing use of media services over the Internet. Libraries report a 30 percent growth in both video and audio content over the last year.[8] Also, libraries are increasingly using two-way videoconferencing for their staff to reduce costs. More and more students are relying on videostreaming for class lectures from their college or university for distance learning and media content dissemination. Some state and local governments now require video training, for example to obtain a driver's license. More and more websites employ Web 2.0 applications that involve greater interaction with the user. Health care providers and businesses are integrating streaming video into standard components of their websites.

While this research is extraordinarily important, perhaps more memorable are the reports I received from my libraries in Missouri. In preparation for this hearing, I asked my libraries to send me examples of how their Internet access has benefited their communities. Here are a few of these examples.

From a librarian in Nevada, MO:

> I have been moved when I helped a wife who needed to IM her husband in Iraq, or a grandmother who, for the first time, saw a grandchild on the Internet, or a child who needed to find a Martin Luther King, Jr. speech. None of these people have their own computers at home. This is like the whole Carnegie movement for books, *i.e.,* it tried to provide information to the people who could not afford books. Now, the challenge that we face is that people cannot afford computers or Internet. This is especially true in rural America. These individuals might have computers, but getting access to an Internet connection is difficult

[5] Bertot *et al.,* p. 28.
[6] Communications Workers of America, *Speed Matters: A Report on the Internet Speeds in All 50 States,* August 2008, p. 3.
[7] Bertot *et al.,* p. 10.
[8] *Ibid.,* p. 51.

if not impossible. I've seen all these examples and more and they always make me think that what we do is worth it.

From a librarian in the McDonald County Library, Pineville MO:

The little Noel branch library has a small computer lab, and during a 3-hour period last week, . . . I encountered 5 different languages at one time, helped Somali refugees fill out citizenship forms, watched a toddler in a diaper handle the mouse on the children's computer like a pro, observed online college courses being taken, helped an older gentleman send an e-mail to his son in Japan in the military—the only way he could afford to communicate with him. Our little computer lab provided access to job searching and a way to "escape" this small rural impoverished town with our high-speed connection.

From a librarian in Wright County, MO:

In our rural community the only public access to broadband IS the library. Business people come in to order and research products because it takes them less time to do these tasks if they use our computers rather than use the slower ones they have at their places of business. We are an impoverished community and we have a lot of patrons that are going to college 2 days a week, they come into the library and download their lessons, talk to their professors, do some of their assignments on-line and then send in their homework on-line. They often compliment us on having such a fast connection.

We do our cataloging through the Internet because we do not have the money in our budget to hire a professional catalog employee. This helps our library budget out tremendously since I do not know where we could find the money for this position. I believe that this is one of the best things that the State helps us with—the fast Internet connections we have at all branches.

From a librarian in Oregon County, MO:

What Internet access means to the Oregon County Library District and our patrons? It means that a 90-year-old great grandma can come into the library and read her e-mail, see a picture of a great granddaughter in Texas on her first day of kindergarten and print out the picture to show everyone. It means that our local college students can work on-line, communicate with their professors, e-mail their assignments, take on-line classes and compete on a level playing field with students from metropolitan areas. It means local citizens who can't afford personal home computers and a fast Internet connection can come to the public library and use our resources. You must keep in mind; Oregon County is a rural, economically disadvantaged county. The Alton Public Library is located about "fifty miles from anywhere". What does Internet access mean to us? It means everything!

From a librarian in Warrensburg, MO:

The Social Security office in Warrensburg closed last year. The nearest physical offices are now in Sedalia or Lee's Summit—a 30+-mile drive for nearly everyone in the two counties we serve. Since many of the activities related to Social Security (go to *http://www.ssa.gov/onlineservices/* for a list) can be done on-line, it is crucial for the 80,000 residents of Johnson & Lafayette Counties to have access to the Internet. Our connections are quick (T1 and faster) so we can assist those who cannot travel to the Social Security offices or those who have no computer or decent connection speed.

From a librarian in Morgan County, MO:

High-speed Internet access is critical in Morgan County. We are a poor rural community. Students who cannot afford to go away to college stay at home to work and take online classes and we proctor many of their tests monthly. We have kids who commute to the local community college and come to the library to check and complete assignments. This is their only opportunity to continue their education. We have MANY grandparents for whom the public computer is their only link to children and grandchildren. We print a lot of family photos! Seniors who do not drive great distances rely on us to bring their families together.

Society has made it necessary for almost everyone to have computer access. People come in to apply for jobs online on a weekly basis now that large chain stores like Target, Lowe's, Applebee's, and Wal-Mart require people to apply for jobs online. More local companies now require online applications and even

truckers apply for jobs online. Our community would be at a great loss without the Internet.

The dad in a local family was being sent to Argentina for his job and the family wanted current information on climate, food, culture, etc. The library did not have books on modern Argentina (not much demand usually), so the Internet brought Argentina to them. Home-school families, who do not have a school library computer, use our library to access the Internet for world news, homework help and more.

From a librarian in Centralia, MO:

Internet is vital to Centralia patrons for online job applications. More and more companies are requiring job applications to be done by computer. The staff has helped numerous grateful patrons that need a non-technical job but have no computer skills to apply. How sad it would be if community members were unemployed just because they had no Internet access or computer skills.

From a librarian in a suburb of St. Louis, MO:

When I was at the Richmond Heights Memorial Library, I observed a nice young man who came in frequently to use our computers. I never really knew what he was doing, but one afternoon he came up to me at the reference desk and proudly announced, 'I got into medical school!' I congratulated him, and he thanked me, noting that he had done the entire application process right there on the library's computers. I thought it was the kind of success story for which we live.

From a librarian in the town of Ozark in southwest Missouri:

I remember the young man who didn't live in Ozark but was just traveling through and came into the library on 9/11. His sister worked in the Twin Towers and he came to our library to check the news and send e-mails to his family in New York City.

From a librarian at Wood Place Public Library:

Providing reliable, fast Internet access has become an increasingly necessary library service in my small rural community. Today it is used by many of the lowest income patrons and is vital for anyone who is trying to "get ahead". The GED classes that are held here have started using Internet based study programs. There are also several individuals that come in regularly to work on their on-line college classes. Having college classes available is making it possible for more non-traditional students in our community to take college classes.

I stopped in a convenience store recently and the clerk was one of the middle-aged patrons that have been coming into the library to take college classes online. She said the convenience store job is her second job and in addition to working two jobs and raising a family she is slowly working her way through college in order to eventually obtain a better paying job. It's rewarding to see someone working so hard to become financially stable.

I also see lots of individuals here that are not working or not able to make ends meet. Their first step toward becoming financially independent is to find work, so they don't need to rely on public aid for food and other necessities. The local McDonald's is one of the businesses that hire individuals with no prior work experience. McDonald's now only accepts online applications, and of course many of the people who need these jobs don't have access to the Internet at home. We help many individuals find their way into the online application website for McDonald's.

We recently used an LSTA grant to fund an upgrade and expansion of our public access computers. I thought that after this project was complete, we'd have all the Internet services needed for this small community. I was wrong! Everything was done in June 2008 and already the demand has increased to the point where people are often waiting for their turn to use the Internet. We have set aside a room to add a computer lab and have furniture available. I know that there is an LSTA grant available that will partially fund the equipment we now need in order to meet the basic needs of our patrons.

However, we don't currently have enough funds to even provide the 25 percent match that is required with that grant. I don't think the taxpayers will approve additional funding for us and the local businesses and organizations that we used to rely on to help fund library projects are already overwhelmed with requests for financial assistance from other entities.

I hope your visit to Washington will help inform Congress that funding for increased broadband Internet access at libraries is necessary for the good of our country.

From a librarian at Macon Public Library:

Here at Macon Public Library we feel our MOREnet Internet access is as important to our community as our state and Federal highways. Our computers are used daily and often people come to us in a panic like the lady who had very little travel experience and had ordered airline tickets over the phone but was told she had to go online and print her tickets. She had no computer, no Internet access and no computer skills. We easily helped this woman and lessened her stress so she could enjoy her trip.

Wal-Mart employees use our public terminals to access their pay history. They have online access at work, but when they need assistance and have privacy concerns, they prefer to ask us instead of someone at their place of employment. We do more and more online test proctoring for students of all ages and abilities who are often on a budget and saving travel miles really makes a difference. These are just a few examples of how average citizens in a City of 5,500 people depend on public broadband access in their libraries and feel it is a necessity.

From a librarian at Daniel Boone Regional Library, Columbia, MO:

We are opening our computer-training lab on Friday mornings for Refugee and Immigration Services to help their clients. We also have added a special time each week in the computer-training center to help people with on line job applications and writing resumes. This is in addition to our normal classes and partnering with AARP to provide electronic tax filing for people over 65 and low-income members of the community. They are always so grateful—when I walked by 1 day last week I was greeted with a round of applause for allowing AARP to use the space. I know computer access means a lot to them. At CPL, we had 2,800 people log on using our wireless access just in July. We see more and more business people, travelers and students taking online classes and others using our wireless capacity.

From a librarian in the Doniphan-Ripley County Library:

We had a patron who had a good deal of pain due to blockages in the veins in her legs and needed surgery. She had heard of a new kind of procedure with a cool laser that needed much less recovery time but she couldn't find anybody who knew anything about it. With some research on the Internet, I found a surgeon in Springfield, MO who specialized in the surgery and successfully performed it on her. A year and a half later, the hospitals in Cape Girardeau, MO (closer to her home) had the equipment but it was too because the patron needed the surgery immediately and we were able to help her avoid a long and painful recovery with the old technique.

You can see from these examples why librarians well understand the importance of broadband. Not only have we embraced the digital revolution, we also maintain our more traditional services—services that are now in greater demand because technology has also made our traditional resources better known, increasingly used and easier to share through interlibrary loans and online bibliographic catalogs.

While our efforts to enhance Internet connectivity have been incredibly rewarding, we need to do more. Broadband needs for a library are not the same as the needs for home users. Libraries need to respond to a wide range of bandwidth-intensive applications requiring simultaneous robust connectivity for multiple users. We must support user needs at in-library computer workstations, for those connecting wirelessly on their laptops, and for those connecting remotely from home.

As I mentioned earlier, the Internet has grown beyond all our previous wildest expectations, and libraries across the country are constantly playing catch-up with the growth in demand. Video-based services require exceptional levels of capacity. Even ordinary consumers will soon be demanding huge amounts of capacity for basic uses. Or, as some advocates have said, "today's bandwidth hog is tomorrow's average Internet user."

While policy-makers and libraries have made extraordinary efforts to adapt to this rapidly changing environment, libraries are challenged to take maximum advantage of these new services. Public libraries across the country are struggling to find, install and pay for large enough broadband "pipes" to meet the great demand for Internet access. Frequently, patrons must wait in line to use the computers and librarians often find that their networks slow to a crawl, especially in the afternoon when students get out of school and come to the library to do homework. Several

libraries have delayed purchasing popular online resources, such as the interactive homework help site *www.tutor.com,* in an effort not to exacerbate already slow access speeds.

These problems are particularly acute because of the rapid innovations of Internet-based technologies. As Moore's Law says, Internet usage is doubling approximately every 18 months, and public libraries are no exception. Libraries that installed a basic T1 connection last year, believing it would satisfy several years of demand, are finding that the capacity is already overwhelmed with additional demand. Our studies how that 82.5 percent of public libraries have fewer computers available than patrons who want to use them, at least some of the time (up from 77.5 percent in 2006–2007) and 57.5 percent of public libraries report that their Internet bandwidth is insufficient to meet the demand some or all of the time (up from nearly 52 percent in 2006–2007).[9]

There are many reasons why public libraries cannot satisfy this burgeoning demand.

- Sometimes there is simply no broadband capacity available from any of the existing broadband providers. Many libraries, located in more rural areas, require connectivity that resembles the needs of a large business, and providers may not even have sufficient pipes to satisfy library needs in those locations.
- Sometimes the cost of the new capacity is prohibitively expensive. We often find that there is little competition among broadband providers so there is little incentive for them to reduce their rates to affordable levels.
- Sometimes local budgets cannot bear the increased costs, even with E-rate discounts.

In Missouri, we have taken special efforts to address the need for greater Internet connectivity. Established in 1991, the Missouri Research and Education Network (MOREnet) provides Internet connectivity, access to Internet2, technical support, videoconferencing services and training to Missouri's K–12 schools, colleges and universities, public libraries, health care, state government and other affiliated organizations.

MOREnet encouraged the state's telecommunications providers to construct a MOREnet-designed, advanced, high-speed, high-bandwidth network throughout Missouri. These connections, managed by MOREnet on behalf of the state's schools and libraries, also laid the groundwork for Internet availability to thousands of rural Missourians. MOREnet is tremendously important to our 152 public library systems, with 372 physical library locations and 29 bookmobiles serving more than 5.1 million residents. Currently, 245 of our physical library locations are served by connections from 1.5 Mbps to 100 Mbps capacity.

[Missouri's public libraries are primarily organized as library districts (88.6 percent) with the rest organized as municipal government libraries (9.4 percent) and as association libraries within a municipality (1.3 percent).[10]]

Unfortunately, Missouri is the exception rather than the rule, as most states do not have the resources to adopt such a framework. Most states are struggling to meet a demand that simply will not wait.

As I mentioned before, the E-rate program is an incredibly valuable resource without which many libraries could not afford telecommunications and Internet service. Libraries across the country have great appreciation for the foresight of this Committee in originating this program. In the coming months and years, the library community is ready to work with you, the FCC and other stakeholders to make appropriate refinements that could enhance the program. Many libraries cannot benefit fully from this program because of the burdensome application and disbursement process. Furthermore, the discount formula does not work as well for libraries as it does for schools so that library discount rates may not accurately reflect the local poverty levels. To encourage more library participation, ALA has submitted a simplification proposal to the FCC. We hope that the Commission will move forward on our recommendations in the near future. In this way ALA hopes to increase library participation in the E-rate and our libraries' ability to serve the American public.

Mr. Chairman, I cannot say strongly enough how indebted we are to your leadership and to this Committee for the enormous progress we have made in the last decade. We know that 99 percent of public libraries can now offer the public some level of no-fee public access computing. We know that the American public is benefiting from our services. Public libraries are at the forefront of the Information Soci-

[9] *Ibid.,* p. 29.
[10] *Ibid.,* p. 97.

ety and provide invaluable access to the Internet that cannot be obtained in other ways.

But as we champion the many public services and benefits brought to us by broadband, we want to ensure that public libraries can continue to serve and enhance our service to the public. It has been clearly demonstrated that Americans need the services and applications that broadband technology delivers. Public libraries require faster and cheaper broadband services to deliver those services to the public.

I applaud this Committee for expressing interest in the role that public libraries play in increasing the availability of Internet access for all Americans. On behalf of the American Library Association, we look forward to working closely with you in addressing the issues of expanding broadband deployment and meeting the telecommunications needs of all Americans.

ATTACHMENT

Libraries Connect Communities

Executive Brief

The State of Technology and Funding in U.S. Public Libraries in 2008

Libraries Connect Communities: Public Library Funding and Technology Access Study 2007–2008 marks the second year of the study, funded by the Bill and Melinda Gates Foundation and the American Library Association (ALA), and continues the research of previous surveys conducted by John Carlo Bertot and Charles R. McClure, with others, since 1994.[1] The study presents national and state data gathered through three integrated approaches: a national survey that collected information about public library Internet connectivity, use, services, funding and sustainability issues; a questionnaire sent to the Chief Officers of State Library Agencies (COSLA); and focus groups and site visits held in four states: New York, North Carolina, Pennsylvania and Virginia.

This year's study reinforces a key finding from 2006–2007: Library infrastructure (staffing, space and bandwidth) is being stretched to capacity. This year's report expands our understanding regarding the strain on public libraries to provide public access to the Internet and other technology, and sounds a warning about the long-term sustainability and future quality of free public access to the Internet and other technology in our Nation's libraries. Report highlights include:

- Libraries serve a unique and important role in providing free access to all types of information and telecommunications services. The demand for such services has increased significantly with growing need for access to digital and online information—including e-government, continuing education and employment opportunities. Almost 73 percent of libraries report they are the only source of free access to computers and the Internet in their communities.
- Funding data indicate volatility in how libraries support this public technology access. Even libraries with historically stable funding are experiencing flat levels of local funding, and have reacted to this by shifting to soft funding sources (fees/fines, donations, grants, etc.) as a way to support public access computing services. Local government revenue and "other" (soft funding) account for nearly 90 percent of overall public library funding.[2]
- Staffing levels are not keeping pace with patron demand—both for those staff who provide training and other direct patron services, as well as for those staff who maintain the information technology infrastructure. Libraries cite the need for greater staff expertise and availability as a barrier to being able to support and manage public access technologies.
- An increase in the number of libraries reporting connection speeds greater than 769 kbps (up 11 percent from last year) is tempered by the vast majority of libraries (75 percent) who report their wireless and desktop computers share the same network, thus diminishing the effective speed of access to the Internet at the workstation. Further, libraries are not moving above the 1.5 Mbps speed as had been anticipated during 2006–2007.

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[1] Information about the reports from the 1994–2006 studies is available at *http://www.ii.fsu.edu/plInternet*.

[2] National Center for Education Statistics. *Public Libraries in the United States: Fiscal Year 2005.* (NCESES 2008–301). Washington, D.C.: NCESES, 2007. *http://nces.ed.gov/pubs2008/2008301.pdf*.

- Public access Internet services (including homework resources, e-books, audio and video) grew dramatically over the past year. These resources provide far more options for library patrons to use inside the library and remotely from home, work and school, but also impact the library's public services and technology infrastructure.
- Many library buildings, inadequate in terms of space and infrastructure (*e.g.,* wiring and cabling), cannot support additional public access computers and technology infrastructure.

The interconnectedness of funding, staffing, buildings and maintenance cannot be underestimated, as all have a direct impact on the amount and quality of public access technology services that public libraries can provide to their patrons.

Key Findings

For some library users and supporters, library technology is defined simply as a working computer on a desk with Internet access and a printer. Anyone working in a public library, however, knows that simple definition inadequately describes the range of technology infrastructure support needed to provide current public access computing. A range of issues detailed in this report require attention to maintain and improve technology access, and can be dangerous if ignored.

The last decade has seen steady growth in the integration of public access computing services within libraries. Public libraries provide an impressive array of services that are critical to the communities they serve, but the underlying support needed to maintain and improve these services has been lagging for many U.S. public libraries. As libraries introduce more computers and more robust technology-based services, keeping up with patron demand is an ongoing challenge.

Funding Remains Flat for Many Public Libraries

> *"Money is going to be tight. There'll be more pressure to do more with less as we've been doing."*

Between 2006–2007 and 2007–2008, overall budgets have remained level for most libraries. Although libraries experienced an average annual increase of 4 percent in operating funds from 1996–2005,[3] preliminary national data suggest decreases during Fiscal Year 2006 in both library expenditures and their distribution. Indications are that individual libraries have experienced a shifting of expenditures away from collections to other line items (*e.g.,* technology, utilities, building maintenance).[4] Redistributing existing resources to other types of expenditures is not uncommon, especially with staffing expenses being the most inflexible of library expenditures. In a 2006 ALA study on funding,[5] libraries reported that when operating budgets decline, reductions in staff, services and collections follow this pattern, in priority of order of cuts:

1. Materials (average of 68.3 percent of libraries responding).
2. Staffing (average of 41.6 percent of libraries responding).
3. Hours open (average of 24.6 percent of libraries responding).
4. Electronic access (12.6 percent of libraries responding).

When scrutinized at a local level, expenditures varied much more than could be discerned at the national level. For instance, when comparing anticipated FY2007 operating expenditures reported in the 2006–2007 *Public Library Funding and Technology Access Study* (PLFTAS)[6] with actual expenditures in this year's study, it is apparent that projected expenditures were not realized. Overall operating expenditures fell short of anticipated levels by 15.5 percent, and varied by specific expenditure type from those anticipated by as much 20 percent:

- 20 percent below anticipated expenditures for salaries.

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[3] National Center for Education Statistics. *Public Libraries in the United States* (FY1996–2005). *http://www.nces.ed.gov/pubsearch/getpubcats.asp?sid=041#.* Note: Beginning in fall 2007, the Institute of Museum and Library Services (IMLS) began publishing the *Public Libraries in the United States* reports. Individual reports are now online at *http://harvester.census.gov/imls/pubs/pls/index.asp*.

[4] Institute of Museum and Library Services. Compare Public Libraries, Fiscal Year 2006 [online search tool of public library data]. *http://harvester.census.gov/imls/compare/index.asp*.

[5] American Library Association. Office for Research & Statistics. *Funding Issues in U.S. Public Libraries, Fiscal Years 2003–2006.* (2006). *http://www.ala.org/ala/ors/reports/fundingissuesinuspls.pdf.*

[6] *Libraries Connect Communities: Public Library Funding and Technology Access Study 2006–2007.* Chicago: American Library Association, 2007. *http://www.ala.org/ala/ors/plftas/0607report.cfm*.

- 0.8 percent below anticipated expenditures for collections.
- 12.5 percent above anticipated expenditures for other expenditures.

Libraries reported actual spending of about 58 percent of operating budgets on salaries in FY 2007 and about 26 percent of the operating budget on "other" expenditures—building maintenance, technology, utilities, etc. In addition to the steady shift of expenditures away from collections to "other," it appears we may be starting to see a shift away from salaries to "other" expenditures, as well.

In this year's questionnaire to COSLA, a majority of state libraries reported level or modest increases in state funding for public libraries in FY 2007, similar to previous years. Coupled with the 2006 ALA study on funding, such spending suggests that public libraries have been grappling with declining purchasing power since as early as 2003. State funding makes up about 10 percent of public library operating revenue. Half of state libraries estimated flat or 1–2 percent increases in overall funding for public libraries, and 28.6 percent estimated overall funding growth at 5–10 percent. The extent to which these gains can be sustained given the recent economic downturn remains unclear.

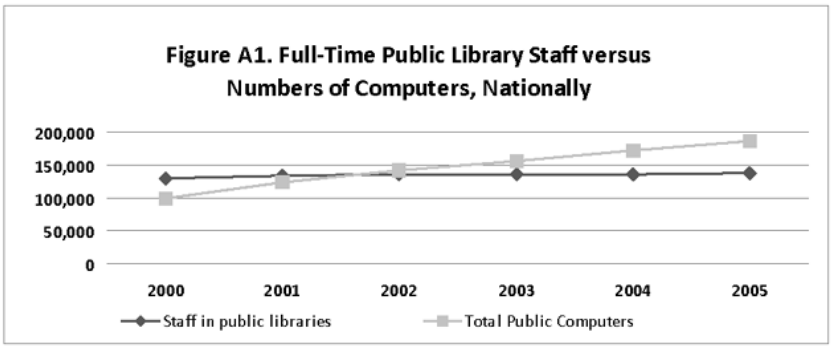
While the detailed financial data section of this study provides more in-depth information, it is important to note that a greater reliance on non-tax sources of funding and a larger proportion of expenditures shifting toward "other" line items and away from staff and collections expenditures are important trends to watch. These are key questions to track when the national public library data (Institute of Museum and Library Services) are reported for FY2007.

Staffing at a Standstill

> *"The technology was brought in, and a whole new service created, without additional staff. It was just double the work for no more money, you know."*

Library staff members at all levels play vital intermediary roles in supporting, managing and maintaining public access to computers and the Internet. For first-time users, a computer is only as good as the library staff available to orient them—including how to use a mouse, how to open an e-mail account and how to search the Internet effectively. In addition to the one-on-one assistance offered in all libraries, almost three-quarters of libraries (73.4 percent) offer information technology training for library patrons. More library staff report they are scheduling one-hour sessions with patrons to orient them to the broad range of skills necessary to do research, find jobs or apply for government assistance. Many librarians report that applying for jobs and government services are among the most staff-intensive patron Internet needs.

Another impact on front-line staff is evident in the high percentage of libraries reporting that managing time limits imposed on patron use of workstations has to be done manually. Close to half (45.9 percent) of all public libraries and 63.6 percent of rural libraries manage computer time limits with paper lists and taps on the shoulder. Not only is this labor intensive, but many library staff reported that it is the most stressful task that they perform. Libraries increasingly are turning to software solutions that allow users to reserve access to a computer and/or automatically cutoff Internet sessions without staff intervention. While all library staff interviewed prefer this time management method, they agree that it adds a level of complexity to the computing environment, and implementation snags are common.



Source: National Center for Education Statistics. Public Libraries in the United States (Fiscal Years 2000–2005). *http://nces.ed.gov/pubsearch/getpubcats.asp?sid=041#*

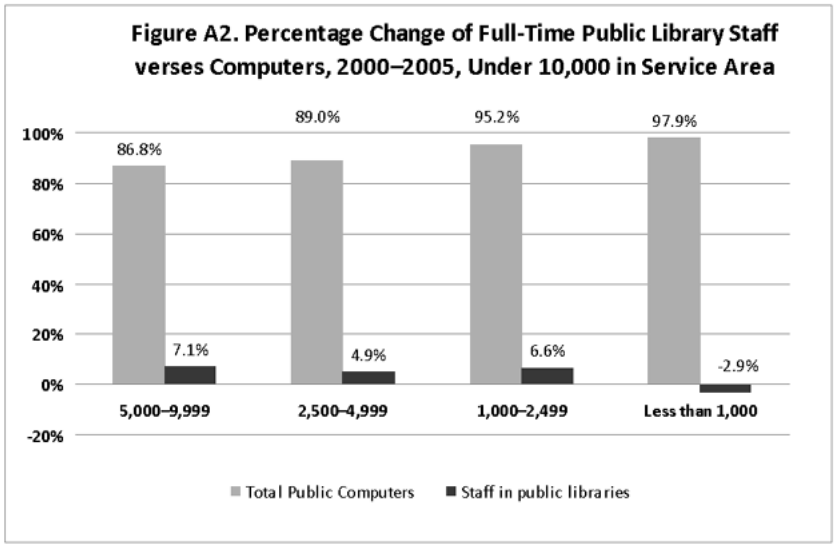
While the reported average is about 50 percent, some library staff, particularly those on library reference desks and in libraries that manually manage computer time limits, estimate that as much as 80 percent of their time is spent in any given day on technology-related tasks.

Beyond direct patron assistance and training, library technical staff develop technology plans and hardware replacement schedules; build and support integrated library systems for circulation, cataloging, online public access catalog, acquisitions and computer management; troubleshoot hardware, software and telecommunications networks; select, purchase and organize data bases and other electronic resources for patron use; plan for and negotiate telecommunications networks; build and update library Web pages; raise awareness of new Internet services . . . and more.

Like additional cars on the interstate, additional computers and Internet services in libraries contribute to the "traffic" and create additional demands for staff to orient patrons and mediate public access to these resources. Along with an 86 percent increase in the number of computers in U.S. public libraries, there was an 18.6 percent increase in library visits from 1.15 billion in 2000 to 1.36 billion in 2005. The number of full-time equivalent (FTE) staff grew only 6 percent over the same time period.[7]

When examined by population service size, the impact on the smallest public libraries (serving fewer than 10,000 residents) is even stronger. Libraries serving fewer than 1,000 residents saw the greatest percentage increase in the number of public computers (up 98 percent), along with a *decline* in the number of FTETE staff (−3 percent).

Responding to an open-ended question about the three most significant challenges libraries face in maintaining their public access computers and Internet access, adequate staffing topped the list, closely followed by financial concerns and computer maintenance and management. These challenges included staff skill levels and training needs, availability of IT staff support and overall inadequate staff levels. Rural libraries (65.2 percent) were more likely to name the need for more staff as their top challenge, when compared with their suburban (60.5 percent) and urban (44.4 percent) counterparts.



Staff Training Needs Outpace Supply

> *"I really wish there was an easier way to get the technology and training. We teach ourselves, and we try to help each other. It should be easier."*

[7] National Center for Education Statistics. *Public Libraries in the United States* (FY 2000–2005). *http://www.nces.ed.gov/pubsearch/getpubcats.asp?sid=041#.*

The impact on staff to support the increasing services is often expressed with frustration. There is a limited amount of time for staff to train themselves on the new technology-based services offered to the public, as well as the time to adequately support their patrons' needs for training and instruction.

With almost 60 percent of libraries staffed by fewer than five full-time staff members,[8] the difficulty of providing coverage for staff to receive training elsewhere is a challenge often compounded by long travel times for rural library staff. Scheduling time for in-library training is also complicated, especially when there is little overlap time in schedules for part-time and full-time staff.

In the questionnaire to COSLA, about 90 percent reported offering some formal training to public library staff in six categories that build skills in funding, public awareness and/or management of technology in libraries. Technology planning (34 percent) was most likely to be offered at least once a year, followed by advocacy/marketing (22 percent) and technology evaluation (19 percent).

IT Support Lags

> *"It comes down to me. I'm learning as I go. I've waited up to a week to get a computer hard drive fixed by county IT staff."*

The need for dedicated technology support staff was identified as one of three main themes that emerged from the 2006–2007 study, and this need continues unresolved, as evidenced by data collected during the current study. In fact, for the first time, the 2007–2008 survey asked who provides information technology (IT) support (*e.g.*, troubleshooting desktop issues, Internet connectivity, the library Web page) for the library. The three most common types of support reported were:

- Building-based staff, not trained as an IT specialist (39.6 percent)
- System-level IT staff (38.5 percent)
- Outside vendor or contractor (30 percent)

The disparities are once again pronounced between urban and rural libraries, however. Rural libraries are far more likely than urban libraries to depend on librarians or other library staff who are not trained in IT (44.1 percent) and on outside vendors (36.3 percent)—or even volunteers (14.4 percent)—to support their technology. Urban libraries are most likely to have system-level IT staff (76 percent).

One source of IT support for about 21 percent of urban libraries and 16 percent of suburban libraries—county/city IT staff—can be both a benefit and a challenge. Several library directors reported a clash between the library's mission of providing open access to computer and Internet resources for a wide range of users and user abilities, and the typical county/city IT approach that protects data and limits access, as would be more common in an office environment. One director reported this is an issue for ongoing education and discussion—including the decisions about when to schedule live updates on the city/county network, and what may be uploaded or downloaded via library computers. Additionally, many city/county IT departments are understaffed, and libraries are one of many agencies in need of technology support.

Another complicating factor for libraries working to hire and retain IT staff is the salary available to compensate these high-demand staff. In the general population, computer and information systems managers are compensated at an average of $101,580,[9] compared with $59,974 in a public library setting.[10] The 2007 average public library director salary is $77,200.[11]

Internet Access Speeds Bump Up, Fall Short

> *"Our IT department looked at our bandwidth (1.5 Mbps) and found that at 2 p.m. in the afternoon, it was slower than dial-up, we had so many people using it."*

A positive development is that the number of libraries reporting connection speeds of 769 kbps or faster increased 11 percent since last year. More than half of urban libraries (51.6 percent), 42.1 percent of suburban and 32.1 percent of rural libraries

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[8] National Center for Education Statistics. *Public Libraries in the United States: Fiscal Year 2005.* (NCESES 2008–301). Washington, D.C.: NCESES, 2007. *http://nces.ed.gov/pubs2008/2008301.pdf.*

[9] U.S. Bureau of Labor Statistics. *Occupational Outlook Handbook.* 2008–09 edition.

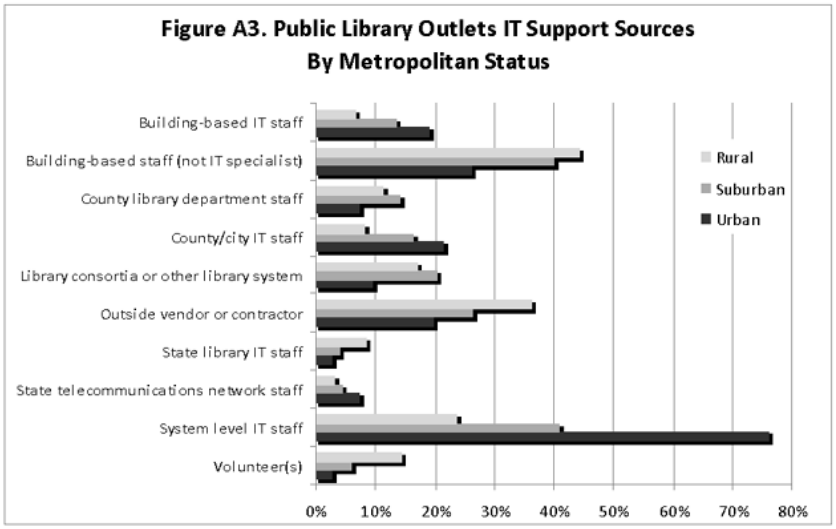
[10] American Library Association-Allied Professional Association. *ALA-APA Salary Survey 2007: A Survey of Public and Academic Library Positions Requiring an ALA-Accredited Master's Degree.* Chicago: American Library Association, 2007.

[11] *Ibid.*

now report offering a T1 connection. In the COSLA questionnaire, several state librarians suggested T1 should be the *minimum* level of connectivity for all libraries in their states. Although many libraries improved access by moving to T1 from lower speeds, there was a slight decline (about 3 percent) in the number of libraries reporting access speeds above 1.5 Mbps.

There also is evidence in the 2007–2008 study that more libraries have reached capacity in their technology infrastructure. Even with more libraries at T1 speeds, the percentage of libraries that report their connection speed is insufficient to meet patron demand some or all of the time is up about 5 percent over the 2006–2007 study. This may be attributed to shared connections between wireless and desktop computers (up 25 percent from last year), the broadband demands of online services and resources, and the continual use of library public access computers.

About 17 percent of libraries reporting in 2007–2008 had plans to increase access speeds in the coming year, up about 3 percent from the 2006–2007 study. Slightly more libraries reported that they were at their maximum connection speed available (17.1 percent compared with 16.6 percent last year), or were unable to afford additional bandwidth (21.2 percent compared with 18.1 percent last year). Proportionally, all libraries (rural, suburban and urban) considered the cost of increasing access speeds to be a barrier hindering upgrades, but rural libraries (24.8 percent) disproportionately reported that they are at the maximum level of connectivity.



Although funding is a strong indicator of growth and sustainability when providing computer-based services for the public, the overall quality of these services depends heavily both on access speeds and on the adequacy of hardware—having enough computers as well as the age of those computers.

This year's study revealed that the age range for library computers in use is quite broad; libraries in all types of communities are keeping computers older than 4 years in use to support patron demand. When asked about key factors affecting the replacement of public access computers, 89.6 percent of libraries reported cost and 33.1 percent reported maintenance and general upkeep issues as factors. Clearly, the impact of reliance on soft funding and insufficient IT staff are recognized as growing barriers to supporting ongoing public technology access.

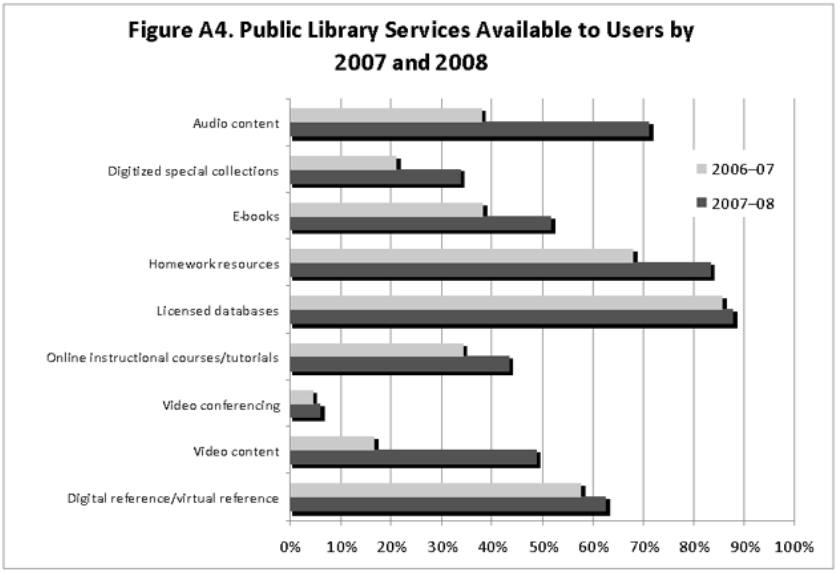
Internet Services Show Double-Digit Growth

"We're not being used less; we're being used differently."

In addition to the hardware and software offered in every U.S. public library building, most libraries have created increasingly robust virtual collections of online resources via their websites and online catalogs. This year's survey found that nearly every category of public Internet service offered in U.S. public libraries increased—sometimes dramatically—from the 2006–2007 study.

The survey indicated double-digit growth in the availability of a range of resources in five key online services:

- Audio content increased 33 percent (from 38 to 71 percent).
- Video content is up 32 percent (from 16.6 to 48.9 percent).
- Homework resources grew 15 percent (from 68.1 to 83.4 percent).
- E-book availability increased 13.5 percent (from 38.3 to 51.8 percent).
- Digitized special collections increased by almost 13 percent (from 21.1 to 33.8 percent).



Licensed data bases to support education (like *World Book* and test preparation materials), business (like *Standard and Poor's*) and life interests (such as genealogy) are still the most commonly provided Internet-based services—available in 98 percent of urban libraries, 93 percent of suburban libraries and 80 percent of rural libraries.

Also of interest is that these online services grew in libraries of *all* sizes. Urban libraries—which generally benefit from greater Internet access speeds, dedicated technology budgets and dedicated IT staff—lead in every category of online services. But their rural counterparts reported the greatest percentage growth in offering homework resources (up 15 percent) and audio content (up 34 percent). Suburban libraries, too, increased all online services and led their counterparts in the percentage growth of online instructional courses/tutorials provision (up 13 percent).

Library staff rank the top two uses of public Internet service that are as critical to their community: education for K–12 students (78.7 percent); and job-seeking services (62.2 percent). In fact, these responses increased significantly in both categories since last year. The third most critical use is providing access to government information (55.6 percent), which has now grown larger than the service categories for providing education resources and data bases for adults/continuing education services (46.9 percent) or computer and Internet skills training (37.6 percent).

In addition to providing these informational and lifelong learning resources, libraries also provide peripheral device support to library patrons. The 2007–2008 study asked about these devices for the first time and found that public libraries allow users to access and store content on USB storage devices (*e.g.,* flash drives, portable drives) or other devices (72 percent), make use of digital camera connection and manipulation (37.4 percent) and burn CDs/DVDs (34.7 percent).

The results and effects of these increases in online public library services are manifold. The good news is that library users who visit the library in person or virtually via its website have more access to more resources—many of which are unavailable or too expensive to purchase at the individual consumer level. The tradeoff is that these services often come at the expense of reduced Internet speeds, funding for other library resources and higher expectations by patrons for library staff assistance in using these resources.

Buildings and Infrastructure Further Stretched

> *"Our headquarters library is twenty years old this year, and it was built with no provision for Internet access."*

This year also marked the first increase in the number of new computers in libraries since 2002.[12] The average number of public access computers increased by 1.3 per library in 2007–2008. Urban libraries gained the most—2.7 more, now averaging 21 per library. Suburban libraries reported modest gains, adding about one computer per library and now averaging nearly 14 computers per library outlet. Rural libraries gained the least, adding only about 0.4 computers, averaging about 7.5 computers per library in 2007–2008.

For the second year, libraries reported space issues and challenges in maintaining an adequate supply of building-based electrical and IT wiring to support technology-based services. More than three-quarters of libraries (77.7 percent) reported that space limitations are a key factor when considering adding public access computers. Another 36.4 percent reported the lack of availability of electrical outlets, cabling or other infrastructure as a barrier—up from 31.2 percent in 2006–2007.

Although purchasing equipment and basic building maintenance may be paid from annual operating sources, significant building improvements are typically made from capital revenue sources. Fewer than 50 percent of public libraries benefit from capital revenue sources and most receive less than $10,000—an inadequate amount when rewiring or significant cabling is required to increase technology-based services.[13] A majority of library buildings are 25 to 50 years old, and 40 percent of library buildings are estimated to be in fair or poor condition.[14]

To respond to these challenges, many libraries have added wireless to support patrons bringing their own computers to the library or to support laptop check-out for in-library users. Libraries also reported the growing need for staff training in implementing wireless, as they continue to dedicate desktop computers to patron use, and rely on wireless laptops for training or the demonstration of new Internet services.

During site visits, a number of library directors indicated there was high demand for more workstations and wireless connectivity at their libraries. But, for the reasons noted above, such was unlikely to occur. Moreover, obtaining more workstations or wireless connectivity might only exacerbate the strain of providing technology training to users and staff, and could put even more pressure on the library's budget to purchase additional software and other resources for the workstations, as well as require additional funds to address workstation maintenance issues.

Fifty-six percent of libraries have no plans to add computers in the coming year. This, together with the issues of insufficiency of bandwidth access, ongoing challenges to fund staff support for IT and the inadequacy of building capacity and technology infrastructure, suggest the growing strain that libraries face to keep up with user demand for public access computing.

Call to Action

There must be a greater awareness of the challenging issues facing public libraries and a renewed focus on sustainable solutions that improve the quality—as well as the quantity—of public technology access in U.S. public libraries.

Millions of people throughout the United States depend upon libraries for their access to online educational opportunities, job-seeking assistance, e-government interactions, and help in using information resources. Almost 73 percent of libraries report they are the *only* source of free access to computers and the Internet in their communities.

This study also revealed that public libraries indicate that their workstations are in near constant use. Although wireless access is available in almost two-thirds of libraries, there are also increased levels of service and resource demands for e-government, digital content and a range of other patron services that impose a greater load and impact on available bandwidth.

Public library advocates must focus on specific areas needing urgent attention:

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[12] Bertot, J.C. and C.R. McClure. Information Use Management and Policy Institute, Florida State University. *Public Libraries and the Internet 2002: Internet Connectivity and Networked Services.* (2002). *http://www.ii.fsu.edu/plinternet_reports.cfm*.

[13] National Center for Education Statistics. *Public Libraries in the United States: Fiscal Year 2005.* (NCESES 2008–301). Washington, D.C.: NCESES, 2007. *http://nces.ed.gov/pubs2008/2008301.pdf*.

[14] Chief Officers of State Libraries Agencies (COSLA), Legislative Committee, National Construction Survey, 2007. Prepared by the New Jersey State Library for COSLA.

- Public libraries need stable and sustainable funding for technology services. Libraries currently are shifting expenditures to cover technology costs and/or relying on "soft" (non-tax) support to fund technology. In doing so, libraries mask the impacts of funding cuts and increased operating costs—sometimes until they are literally forced to close their doors.
- Librarians and policymakers must re-think Federal and state support to public libraries. Only a small portion of public library funding (0.5 percent) comes from the Federal Government, yet public libraries have important social roles and responsibilities to American society and overall quality of life. New strategies for national support to public libraries should be developed.
- The public library community needs to develop new models for deploying and managing technology. In addition to participating in library networks, cooperatives and consortia that leverage shared resources, libraries need to develop strategies to work with other community organizations to promote additional public access technologies. Collaboration with educational organizations, such as public schools and community colleges, other local community groups and private sector firms may produce ideas and strategies that can integrate with, extend and/or enhance public library networked services. Such collaborations can be an important component of the library's advocacy strategy, alleviate pressure on the public library as the sole provider of public access and create a more robust community-wide public access infrastructure.
- Investing in additional public library staff and staff training activities are investments in technology. The one-on-one and formal trainings offered in libraries are essential for many patrons, and for many, this is the only avenue for them to learn how to successfully use Internet-based resources for work, school and life interests. Increasingly complex networked environments also demand dedicated IT staffing.

These are only some of the most important areas where public library advocates should focus their attention. Additional suggestions and possible strategies are discussed elsewhere in this report.

The CHAIRMAN. Thank you very much, Ms. Conroy.

May I now call upon Senator Stevens to introduce our final witness?

Senator STEVENS. Mr. Chairman, I think we should thank Mr. Peltola for being where he is because he came to his office at 6 a.m. this morning because of the 4 hour time zone difference.

I want to show you first—this is a chart that shows the road map of the United States, the roads in the South 48 and the roads in Alaska. Now, in Alaska, without roads, we proceeded to adopt the whole concept of telemedicine, and the YKHC, headed by Gene Peltola, has led in this effort.

The Chairman actually was with us as we went up to visit Gene in Bethel, Alaska right there. This is a map that shows our transportation system. We basically have no transportation system. We have gone to telemedicine and tele-education in Alaska far ahead of the rest of the country. And the leader in this now is Gene Peltola, who heads the Yukon Delta area. Really it is the Yukon-Kuskokwim Health Corporation now.

And Gene I thank you very much for coming. It is your turn to make your comments. Thank you for agreeing to do this.

STATEMENT OF GENE PELTOLA, PRESIDENT AND CHIEF EXECUTIVE OFFICER YUKON-KUSKOKWIM HEALTH CORPORATION

Mr. PELTOLA. Thank you. Good morning, Chairman Inouye, Senator Stevens, Senator Hutchison. I am Gene Peltola, President and CEO of the Yukon-Kuskokwim Health Corporation. I thank you for giving me the opportunity to address you today by video teleconfer-

encing about the hugely positive impact that broadband deployment has had on the delivery of health care services to some of the most isolated and economically challenged citizens in the United States.

As I said, I am the President and CEO of the Yukon-Kuskokwim Health Corporation, also known as YKHC, a consortium established by 58 federally recognized Native American tribes. We provide comprehensive health care to approximately 28,000 largely Yup'ik Eskimo people living in 50 communities spread across the Yukon-Kuskokwim Delta, a roadless region approximately the size of the state of Oregon.

The Yukon-Kuskokwim Delta, which is depicted on the map attached to my testimony, is located on the Bering Sea on the western coast of Alaska, nearly 4,000 miles away from Washington, D.C. The average per capita income of our patients is approximately $15,000 a year.

Providing health care for YKHC's patients is a profoundly difficult challenge.

First, transportation costs in the Y-K Delta, where villages are reachable only by plane, boat, or in the winter by snow machine, have always been high. Now that the cost of gasoline is approaching $8 a gallon in our villages, the cost of transporting a patient from a village to a subregional clinic or to our regional hospital in Bethel for anything but the most essential services or the most serious illnesses or injury has become cost prohibitive.

Second, during our long, dark winter, the Bering Sea generates some of the most violent weather in the world. This can isolate our villages for days or even weeks.

Broadband deployment has transformed the delivery of health care services in the Y-K Delta. Broadband plays a critical role in YKHC's efforts to manage the challenges I have just described.

Five years ago, YKHC challenged the telecommunications providers in the Y-K Delta to improve their satellite-based broadband services. In response to YKHC's challenge and in reliance on the Universal Service Fund's rural health care program and other Federal broadband programs, private industry made a $50 million-plus investment in a terrestrial microwave network, which we call DeltaNet, which links substantially our villages. The high speed and low latency of this new network are ideal for medical applications.

We are proud that YKHC now leads Alaska in the delivery of broadband medical services. This year, YKHC decided to increase bandwidth to 3 megabits per second for all of our clinics, 5 megabits per second for our subregional clinics, and a 7.5 megabits link to the Internet in Anchorage. Key benefits of this higher-speed network are found in the areas of telepsychiatry and teleradiology.

The need for behavioral health services in rural Alaska is growing disproportionately to the size of the population. Rural Alaska has high rates of alcoholism, drug abuse, fetal alcohol syndrome, and suicide. In 2004, Alaska's National Guard was called upon for combat operations in Iraq and Afghanistan. Many of these guardsmen have completed at least one tour and have returned to their villages, bringing with them the same mental health issues affecting combat veterans across our country. Rural Alaska veterans,

however, are a long way from the nearest Veterans Affairs facilities in Anchorage, Alaska.

In conjunction with bandwidth increases, YKHC has deployed 53 high definition video teleconferencing units throughout our service area. Using high definition video, YKHC has begun delivering behavioral health evaluation, treatment, and consultation for veterans and other patients at its residential facilities in Bethel and at clinics in our Y-K Delta villages through health professionals working from Bethel and the Alaska Psychiatric Institute in Anchorage and soon with a psychiatric group out of the State of Minnesota.

Because of our terrestrial broadband network, YKHC is now able to offer full remote diagnostic imaging services to its patients not only in Bethel, but also in our four subregional clinics. Those are located in Aniak, St. Mary's, Toksook Bay, and Emmonak. Because of our inability to recruit a full-time radiologist to Bethel, we must rely on teleradiology to meet our needs. We have two full-time radiologists reading all images 24 hours a day, 7 days a week from Dayton, Ohio. Using our broadband network, we are able to send patient images directly to the radiologists in Dayton. There they read the exams in real time. There is no delay. They are waiting at their computers for the exams to cover over the Internet and send us their initial evaluation within 15 minutes from the time the patient was imaged or X-rayed within our organization.

Teleradiology has substantially increased patient access and operational efficiency in diagnosing a multitude of diseases such as pneumonia, fractures, head injuries, appendicitis, and cancers, just to name a few. It has also decreased the long wait times previously associated with patient treatment.

For example, fractures or small changes in a chest X-ray can sometimes be missed by health care providers. This situation usually requires calling the patients back into the health care facility. With the use of teleradiology, we have the ability to communicate and consult with our radiologists on every case to ensure that we have the right diagnosis so that we can start appropriate treatment before our patient leaves the hospital or subregional clinic.

We recently had a patient involved in an ATV accident in the small village of Lower Kalskag. We were able to send the patient to the Aniak subregional clinic, which is only 15 minutes away via plane, to have the patient's lower leg X-rayed. Using teleradiology, it was determined that the patient fractured his fibula. The films were then sent over the network to the orthopedic surgeon in ANMC hospital in Anchorage, Alaska who made the call that the patient did not require surgery, only a cast. This not only saved the patient from coming to Bethel, 120 miles away, and an hour-long plane ride, but also saved him a very expensive trip to Anchorage to see a specialist.

All of this broadband-related progress would not be possible without the Universal Service Fund's rural health care program which the chairman, Senator Stevens, and other members of the Committee and the Congress have supported for many years. On behalf of the Alaska rural health care provider community, I want to thank you all for that support, which has saved countless indi-

vidual lives in Alaska and dramatically has improved the quality of life of all rural Alaskans.

In closing, I would like to make five recommendations to the Committee.

One, expand Medicaid reimbursement to cover telepsychiatry treatment, including patient-site presentation services for behavioral health clinicians and case managers.

Two, address licensing and reimbursement issues for medical professionals participating in distance health care delivery across State lines.

Three, encourage the Veterans Administration to use the Indian Health Service and IHS-contracted medical facilities to provide medical and behavioral health care to rural Alaska veterans.

Four, increase the RHC support mechanism percentage for Internet access from the current 25 percent and add support for advanced services such as managed videoconferencing and network management, which would allow YKHC to focus on the delivery of health care rather than managing core telecom infrastructure.

Finally, five, expand eligibility of USF subsidies to cover the infrastructure that the remote providers need for distance-delivered medical services. This might include bandwidth and videoconferencing hardware.

Once again, I thank you for the opportunity and honor to address your Committee today. Thank you.

[The prepared statement of Mr. Peltola follows:]

PREPARED STATEMENT OF GENE PELTOLA, PRESIDENT AND CHIEF EXECUTIVE OFFICER, YUKON-KUSKOKWIM HEALTH CORPORATION

Good morning, Mr. Chairman, Senator Hutchison, Senator Stevens, and other Members of the Committee. Thank you for giving me the opportunity to talk to you today by video teleconferencing about the hugely positive impact that broadband deployment has had on the delivery of healthcare services to some of the most isolated and economically challenged citizens of the United States.

I am the President and Chief Executive Officer of the Yukon-Kuskokwim Health Corporation, also known as YKHC, a consortium established by 58 federally recognized Native American tribes. We provide comprehensive healthcare to 28,000 largely Yup'ik Eskimo people living in 50 communities spread across the Yukon-Kuskokwim Delta, a roadless region the size of Oregon. The Y-K Delta, which is depicted in the map attached to my testimony, is located on the Bering Sea on the western coast of Alaska, nearly 4,000 miles away from Washington, D.C. The average per capita income of our patients is $15,000 a year.

Providing healthcare for YKHC's patients is a profoundly difficult challenge.

- First, transportation costs in the Y-K Delta, where villages are reachable only by plane, boat, or the in the winter, snow machine, have always been high. Now that the cost of a gallon of unleaded gasoline is approaching $8 in these villages, the cost of transporting a patient from a village to a subregional clinic or to our hospital in Bethel for anything but the most essential service or the most serious illness or injury has become nearly prohibitive.
- Second, during our long, dark winter, the Bering Sea generates some of the most violent weather in the world; this can isolate our villages for days or weeks at a time.

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stantial majority of YKHC's villages. The high speed and low latency of this new network are ideal for medical applications.

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Tele-radiology has substantially increased patient access and operational efficiency in diagnosing a multitude of diseases such as pneumonia, fractures, head injuries, appendicitis and cancers, just to name a few. It has also decreased the long wait times previously associated with patient treatment.

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3. Encourage the Department of Veterans Affairs to use IHS and HIS-contracted medical facilities to provide medical and behavioral health care to rural Alaska veterans.

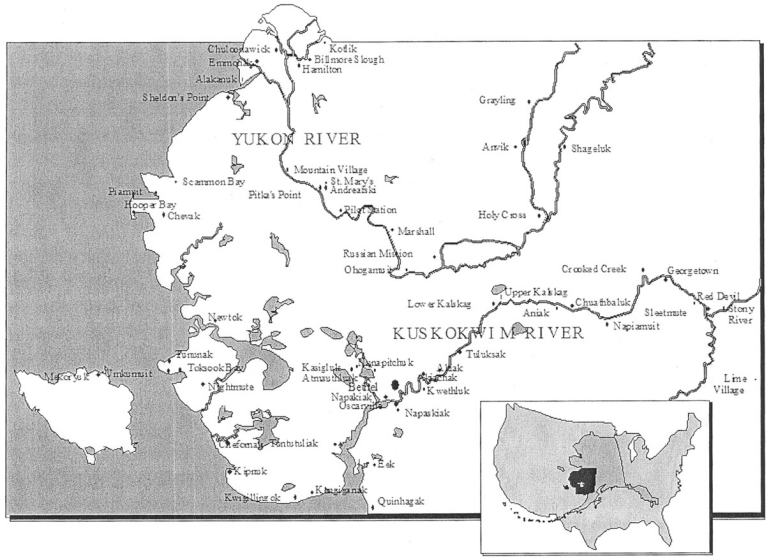
4. Increase the RHC support mechanism percentage for Internet access from the current 25 percent, and add support for advanced services such as managed

video conferencing and network management, which would allow YKHC to focus on the delivery of healthcare, rather than managing core telecom infrastructure.

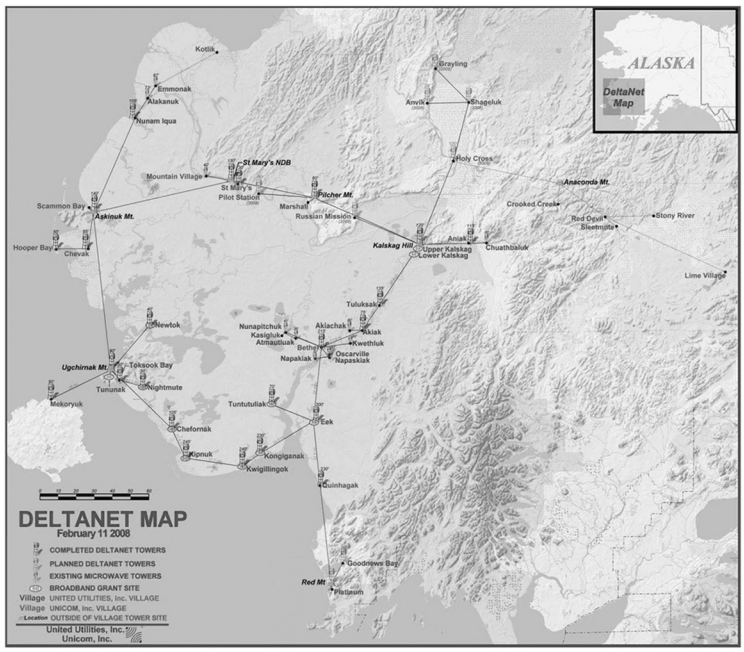
5. Expand eligibility of USF subsidies to cover the infrastructure that the remote providers need for distance-delivered medical service. This might include bandwidth and video conference hardware.

Thank you for the opportunity and honor to address your Committee today.

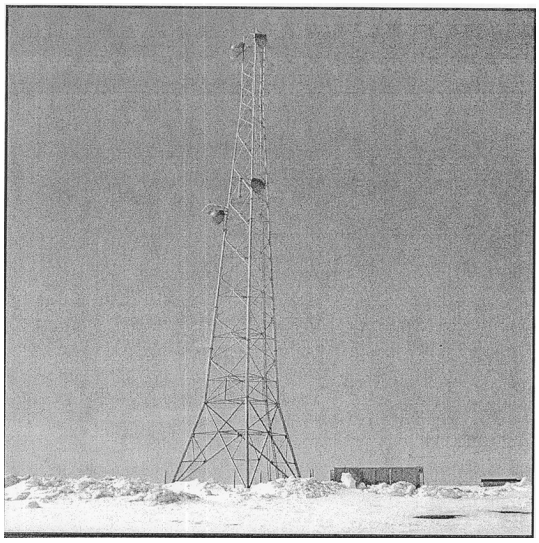
The region served by the Yukon Kuskokwim Health Corporation

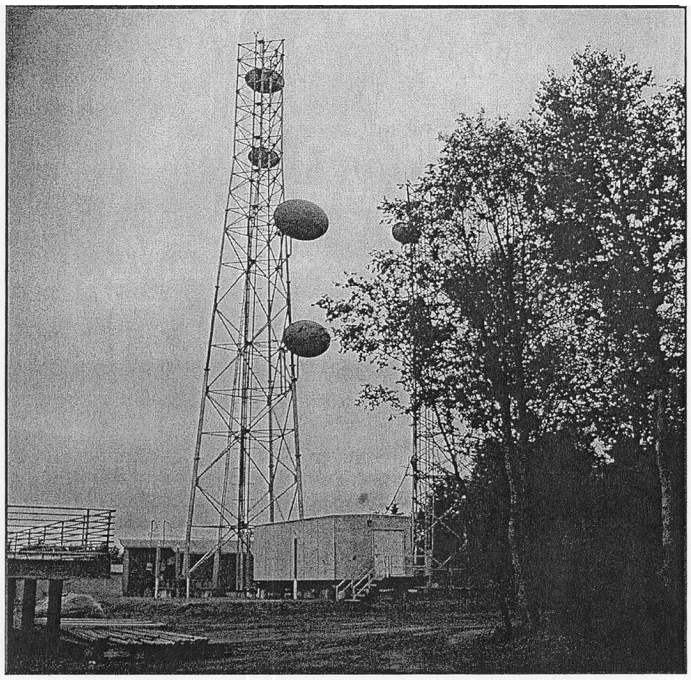


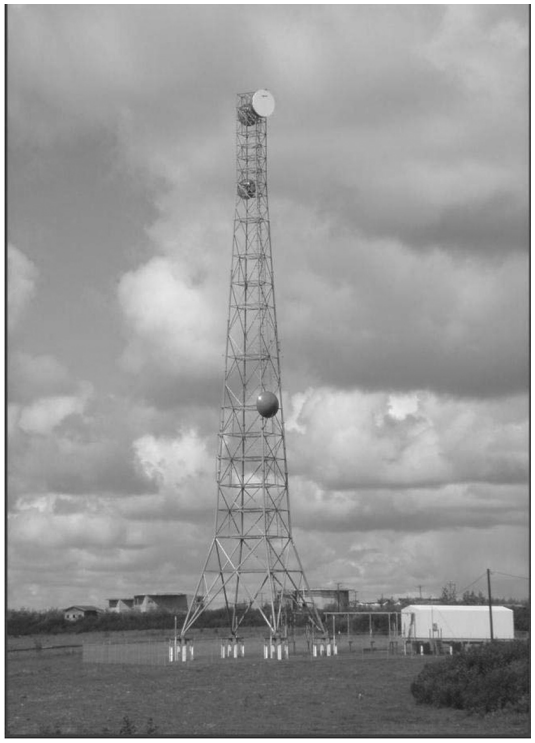
DeltaNet—Broadband Microwave Network in the YKHC Region



Some of the Village DeltaNet Towers







Senator STEVENS. Mr. Chairman, he is light years ahead of the rest of the State. That is the main point I want to make to the Committee. We have not been able to do this all over Alaska. We have been able to do it because of Gene Peltola's initiative in his area. I urge that the rest of the members study this as far as their rural areas and the application, particularly the psychiatric application, is going to be very interesting for veterans throughout the country. Thank you.

The CHAIRMAN. I would like to thank all the witnesses for their testimony this morning.

If we may, we would like to question our witnesses. Senator Stevens?

Senator STEVENS. I have no questions.

I must say, I think it has been a very good panel and I support wholeheartedly the total recommendation that we find some way to expand this concept so that we are covering the areas that are in great need, particularly our veterans services in rural America. When we consider the fact that some of our veterans, as Gene has said, are literally 1,000 miles from the nearest real veterans service, it is going to be very difficult to keep up with some of these people unless we do, in fact, adopt his recommendation that we use the Indian Health Service and other telecommunications services to keep track of these veterans. Under the law, the Veterans Administration is now required to keep track of our veterans for 5 years after their separation. They can only do that through telecommunications.

Thank you.

The CHAIRMAN. Thank you.

Senator McCaskill?

STATEMENT OF HON. CLAIRE MCCASKILL, U.S. SENATOR FROM MISSOURI

Senator MCCASKILL. Thank you, Mr. Chairman.

First, I want to say how proud I am of Ms. Conroy for being here today. She is a terrific librarian, and I sincerely hope that not only do we continue to enhance the availability of the Internet through libraries, that we never lose sight of that unique experience of walking into a library and seeing those grand and glorious books everywhere. And the ability to open a book and crack that cover and be able to turn those pages is something that was an incredibly important part of my childhood and I hope that we maintain that for children for many generations to come.

Let me ask you, Ms. Conroy. Has the Library Association—or maybe some of the other witnesses might know. Has anyone tracked how much online higher education has gone up in the last 5 to 10 years? I noticed there was a consistency in the testimony about online higher education and particularly in these rural areas, particularly because of the costs of commuting for our college education and the impracticability of us moving campuses to many of these locations. Do you know whether there has been any analysis of how much of this is going on and how much of it is, in fact, taking over in terms of classroom education?

Ms. CONROY. Yes, I do, at least for the state of Missouri. I mentioned MOREnet which provides Internet connectivity to higher

education in Missouri. The demands of higher education institutions for bandwidth has grown exponentially in that sector, and I can provide you with those statistics when I get back home.

I do know that local individuals are now able to go to school from their rural communities where before, they would not have left their communities. And they are doing that all online. So I could also provide you some statistics for those usages in the local public libraries. I am going to assume that this is true for the rest of the United States. I know it is true for Missouri.

Senator MCCASKILL. I think we need to really look at that because I think we may need a marketing campaign to encourage more young people to use online education, particularly if we can get some follow-up studies as to how marketable those degrees are as compared to the traditional degree that occurs from someone sitting in a classroom on a campus somewhere.

How much money is the state of Missouri providing in Missouri, Ms. Conroy, in this whole area of connectivity in terms of telecommunication, online education, and telehealth?

Ms. CONROY. What I can answer is the MOREnet budget which is about $22 million, and that covers all those sectors, public, K–12 education, higher ed, libraries, telehealth, State government services, and also some electronic data bases that the State library is able to purchase with that State money.

Senator MCCASKILL. And Mr. Peltola—is that how you say your name?

Senator STEVENS. Gene Peltola.

Senator MCCASKILL. Gene Peltola? Thank you for being with us. Many of us have learned more about Alaska in the last few weeks.

And I wanted to ask you. Missouri has a paltry $22 million that is going to this. What is the total in Alaska that is being set aside not from the Federal Government, but rather from Alaska which we now all know has surpluses? What kind of money is being spent in Alaska by the State government?

Mr. PELTOLA. I am not aware of that, ma'am. The infrastructure that we have developed out here in the Y-K Delta has basically come from the private sector.

Senator MCCASKILL. OK. And some help from, I assume, the Universal Service Fund?

Mr. PELTOLA. The Universal Service Fund pays the majority of the service costs for utilization of our DeltaNet.

Senator MCCASKILL. OK, great.

Mr. Ramsey, from where you sit, do you see the conflict between the FCC and the USDA as it relates to the universal service provider and the funds that are supposed to be available from USDA for connectivity in rural areas?

Mr. RAMSEY. Yes. Senator McCaskill, I think it is a great question. I would answer it in this way. I really concur with what Mr. Cohen was saying earlier about the reform that is needed in the Universal Service Fund, how it is being used, how the money is being allocated. I think we need to do many more things that direct the money in a digital way and not looking at just sort of the dial-up phone system. We have got to modernize the Universal Service Fund to do more of these types of applications. It is really the only source that is available.

But I would also say one of the successes, of course, has been E-rate, but I also think we need to look at creating a way to get to both rural individuals and more low-income individuals. And I think one of the innovative ways of thinking about the low-income population is looking at where they live, and I think we have missed something in not looking at affordable housing. We have launched initiatives around saying we have got over 3,000 public housing authorities in the United States, and yet we are not doing enough to say are we networking those buildings. Are we making sure broadband is there? And I think there is an opportunity to look at universal service and also look at the E-rate to say let us go for the poorest of the poor who are living in public housing in both rural and urban areas. And I would urge that that be something that we spend more time looking at.

Senator MCCASKILL. I think that is a great idea. I do not think people realize how much low-income housing there is in rural America. I am certainly aware of that.

Let me correct the record. I do not think $22 million is a paltry amount of money. It is compared to the Missouri budget of $20 billion. So $22 million is not enough out of a budget of $20 billion to go toward this from the State level.

So thank you.

Senator STEVENS. Will the Senator yield there, though?

Senator MCCASKILL. Yes.

Senator STEVENS. Maybe we should ask witnesses about the contributions to this fund. You know, the fund really started on assessments to long distance, and the balance is still coming from long distance which is a declining income.

Senator MCCASKILL. Right.

Senator STEVENS. I wonder where do they suggest we should get the income for this fund if we are going to expand the demands on it.

Mr. COHEN. Yes. I mean, we think the whole Universal Service Fund needs an overhaul, exactly the way you are describing it. We need to look at how it is funded and then, as we just said, how it is distributed. And we would say there needs to be uniformity in terms of how it is collected across communications services rather than just essentially a tax on consumers of old services, as you have just said. I mean, we should relook at how we collect it, but particularly then how it is used.

Senator STEVENS. Thank you very much. I think as we go forward—and that is one of the things I think the Florida Senator and I are talking about. How do we find some way to sustain this fund if the assessment against long distance continues to decline? And I do think we have to do just what you have said, Mr. Cohen. I think we have to find some way to say that telecommunications services per se—find some way to support universal service.

The CHAIRMAN. Senator McCaskill, are you finished?

Senator MCCASKILL. I am. Thank you, Mr. Chairman.

The CHAIRMAN. Senator Pryor?

STATEMENT OF HON. MARK PRYOR,
U.S. SENATOR FROM ARKANSAS

Senator PRYOR. Thank you, Mr. Chairman.

Mr. Ramsey, let me start with you, if I may. There was an editorial that was written in Arkansas last year that basically makes the comparison between the rural electrification program in the 1930s to deploying broadband today. And not to go too much into this, but one quote is: "According to one historical account, although nearly 90 percent of urban dwellers had electricity by the 1930s, only 10 percent of rural dwellers did. Private utility companies who supplied electric power to most of the Nation's consumers argued that it was too expensive to string electric lines to isolated rural farmsteads." Anyway, they say most farmers were too poor to be able to afford electricity.

To me, that sounds like a familiar argument that we hear today when it comes to broadband deployment, and there is an inequality about how broadband is being deployed today.

So I just wanted to ask you. We talked a little bit about universal service. Do you think that that is the best way we can get broadband deployed? Shall we do something like what the REA set up, which is a very different model? But what do you think we need to do in order to get broadband out to rural America?

Mr. RAMSEY. I think, Senator, it is a great analogy that you are looking at, and I think the important part of the analogy is that there was a goal that was set, that the Federal Government played an important role and created a mechanism.

It is not only the funding mechanism. Again, I go back to my earlier remarks. It is an issue of looking at this from a standpoint of judging and saying is it affordable, is it available, and if it is not available, how do you we make sure that we create incentives or the right kind of investments around availability. And then third, it is the issue of the applications because in some cases, if we could create the right kind of applications, whether it is telemedicine, whether it is online education supporting our high schools, then you would get more private involvement along with government. There is a role for the private sector, a very important role for the private sector.

And I think if we are working together—you know, when we started One Economy 8 years ago and we called it One Economy, our goal has always been to say how do you we get the private sector, the NGO's, and government working together on this issue. So in that analogy that you give, that was an important investment that the Federal Government said had to occur, and I think that is very important.

And I think when you look at how the United States has fallen behind, particularly on issues of speed, I do not want that issue to get lost either because I wholeheartedly endorse what Mr. Cohen was saying earlier about speed. And I think we have got to relook at all of that because we are falling behind. We are not doing enough in applications and the supply and demand side.

Senator PRYOR. Mr. Cohen, did you have any comments on that?

Mr. COHEN. Yes. I think it is three things. First is to stimulate demand. A lot of good examples here about how you do that.

Second, it is to do demonstrations, and I think there are good examples for granting to nonprofits, again, lots of the groups that spoke here today. They then demonstrate what is possible, whether

it is telemedicine or education, and then that helps stimulate demand.

And finally, we have to look at the build-out of the networks themselves in terms of our tax policy and what incentives we give, not only tax policy but in terms of regulation, that encourage high-speed Internet build-out by the industry that is going to build it. I mean, it has to come from somewhere, and we have to continue to look at how we work with the industry, as Mr. Ramsey said initially, to stimulate them to make that investment. They have choices and we have to make this a key policy so that when they make a choice about cap ex, it goes to high-speed Internet.

Senator PRYOR. Mr. Linkous, I appreciated what you had to say about telemedicine because especially in a rural state like Alaska or Arkansas or many of the other states represented around the table today, I think telemedicine is a real solution for some of our health care needs. And it seems to me if you do not have broadband out in rural America, it is very hard to provide telemedicine services out in rural America.

Did you have any more thoughts along those lines about what we need to do to make sure that rural America has access to telemedicine?

Mr. LINKOUS. Thank you, Senator. Yes. I think there was a great intent when the 1996 Telecommunications Reform Act was passed to put in some funds to support rural health care. The utilization of that fund, particularly for health care, has been extremely disappointing. It was originally envisioned that it might be several hundred million dollars. I believe somewhere where around $20 million a year is being sent in that area. So I think it is really important for this Committee to revisit the Congressional intent and what has actually been done by the Administration in implementing that program. I think we have great opportunities that are being lost.

And second, the provision of health care, not only in rural areas but in urban areas, is very different than it was in 1996. As I had mentioned in my testimony, health care is now going to the individual. The original intent of the Health Care Reform Act was to link hospitals with major medical centers in rural areas, but it is now actually into the homes. It is in the individuals. So to really have people get access to health care in rural areas like they do in urban, you have got to make sure we have high-speed broadband to the individual as well.

Senator PRYOR. Thank you.

Mr. Peltola, let me ask you. You mentioned in your testimony a few moments ago—and I may have misunderstood what you said, but I think what you were talking about is the professional licensure of doctors, et cetera that allows them to practice telemedicine. And from that, I assume that what you mean is that in some circumstances, you may actually want to cross State lines in order to get the medical help people need using telemedicine. Is that what you were talking about?

Mr. PELTOLA. Yes, I was.

Senator PRYOR. But usually the licensure—that is a state issue. Are the states not equipped to handle that? So, for example, just hypothetically if Alaska wanted to do some sort of consortium or

some sort of agreement with, say, the state of Washington or Oregon or California or something along those lines, I would think that the states could work that out and you probably do not need Federal assistance to do that. Am I wrong on that?

Mr. PELTOLA. You are correct on that, yes.

Senator PRYOR. Well, I do want to thank you for Alaska's example and what you are doing there in your area because I think there are a lot of lessons there for the rest of us in how this can work and how important this can be.

So, Mr. Chairman, thank you for doing this hearing today.

The CHAIRMAN. Thank you.

Senator Klobuchar?

STATEMENT OF HON. AMY KLOBUCHAR,
U.S. SENATOR FROM MINNESOTA

Senator KLOBUCHAR. Thank you very much, Mr. Chairman.

Go ahead, Mr. Chairman.

The CHAIRMAN. Mr. Linkous, did you want to say something?

Mr. LINKOUS. Yes, if I could just add a comment. You had talked about medical licensure. In the early days of telemedicine, it was an issue. It is a state issue and most medical networks are within the state. But it is now a national issue. And let me give you one example.

In the field of pathology, there are 60 subspecialties in pathology. I know that Alaska does not have 60 subspecialists in pathology. We need to have a national information network for health care just like we do for other things, and we need to have the ability for a physician who is a subspecialist in California to be able to provide those services to the citizens of Alaska. For people who are working in the Angels Network in Arkansas, they can provide those services to the people in Louisiana. So we do need a mechanism through which we can provide these medical services across state boundaries. We are not saying usurp the State authority, which is very important, but the Federal Government to step in and encourage some kind of a sharing relationship among the states.

Senator PRYOR. But can the states not do that by some sort of compact or some sort of agreement between the states?

Mr. LINKOUS. With very strong Federal encouragement, that could happen.

Senator PRYOR. Thank you.

The CHAIRMAN. Senator Klobuchar?

Senator KLOBUCHAR. Thank you very much, Mr. Chairman. Thank you for holding this hearing, and thank you to our witnesses.

I have really two interests in this. The first is as a mother of a tech-savvy 13-year-old, I see the future all too closely. Her hardest moment in the last few years was when I was asked on a college TV show what LOL meant, and I was stumped that it is laugh out loud. And I came home and she said that was the most embarrassing moment of the campaign.

[Laughter.]

Senator KLOBUCHAR. The second interest I have is, of course, something Mr. Cohen well knows, the jobs in rural America, and

I just see that some of these jobs that are going to places like India and Pakistan could be going to Worthington, Minnesota or Thief River Falls.

So I guess I would start with you, Mr. Cohen, and I am very interested in the speed issues. From what I have heard, places like Japan or Korea have speeds at rates that are sometimes 20 times as fast, and at one-half the price as what we get here.

And also we have the issue that even our neighbor to the north, Canada, neighbor to Minnesota to the north, seems to have done smart things. Could you talk a little bit about what Canada has done and if we can learn any lessons?

Mr. COHEN. Sure. I think, first of all, the bill that this Committee is supporting for the most part, S. 1492—I mean, we do not even map out in our country where we stand on broadband. In our Speed Matters campaign, there is a page on every State, including the rural States. Here you see huge white spaces where there is no broadband at all. Step one is we need to know where we stand. In Canada, they have done that kind of mapping. The equivalent there of the FCC is ahead of us in that regard. So I think that is one.

Two, we need to set goals like the kind of goals Senator Rockefeller has talked about in his resolution, very clear goals. And then we must figure out, well, if our goals are, for example, we would support 10 megabits a second by 2010, what will it take to close the gap between where we are now. Once we map out where we are, and how we get there and then how we fund it.

So I think the key difference, you know, whether it is Canada or Japan, is really to look at the demand side and the supply side, meaning the network providers, and how government can play the role of bringing them together, bringing demand together with the network providers and obviously closing the rural and urban divide. Right here in Washington, D.C., we do not have high-speed Internet for most of the city. You do not have to go a mile from here and you are going to fall off the chart that is here, let alone go to rural Minnesota or Alaska.

Senator KLOBUCHAR. Mr. Cohen, how about public-private partnerships? We have had a few towns in Minnesota try to do this on their own with mixed results, and they realize the best way is public-private partnerships. Could you talk a little bit about that?

Mr. COHEN. Yes, sure. I mean, the first thing is the level of capital expenditure. To do what is done in Japan, that is fiber to the premise, in our country in our dollar terms, we are talking about at least, just to pass each house, $1,000 a premise. And so a lot of the public-private partnerships that we talk about here use this very low definition of broadband, and so we get less than 1 megabit a second through a WiFi kind of technology—better than nothing, for sure—as an example that we talk about in many small towns in rural America. But it is not going to provide the kind of services, whether it is telemedicine, whether it is two-way video that we are talking about on a global basis.

And so I think when we talk here about public-private partnerships, we are also talking about getting the network providers and saying to them, the market is not working, and creating the combination of—I guess incentives is a nicer word, but also regulation

that pushes up what broadband means. We cannot have people paying for broadband, as you said, at very high rates and getting very low speeds. People do not even know what the speeds are.

Senator KLOBUCHAR. Mr. Peltola, I was interested in what you have done in Alaska. Can you hear me up there, Mr. Peltola?

Mr. PELTOLA. Yes, ma'am. I can hear you real well.

Senator KLOBUCHAR. Excellent.

You decided to increase the bandwidth to an impressive amount. How were you able to accomplish the increase?

Mr. PELTOLA. We were able to accomplish the increase by working with our private sector provider.

Senator KLOBUCHAR. So that was a public-private partnership with your tribes? Was it a partnership with the tribes and the groups' clinics?

Mr. PELTOLA. It is far from the 100 megabits per second that some other countries have in place right now.

Senator KLOBUCHAR. One last question here I wanted to ask of you, Mr. Ramsey, and that is about One Economy's public interest channel. Of course, Minnesota is the home of Lake Wobegon and a lot of work in the public radio and public TV. Could you talk a little bit more about the online channel, which is clearly the next step that should be taken with public TV and public radio?

Mr. RAMSEY. Thank you, Senator.

The roots of this public Internet channel started about 7 years ago when we launched the website called the Beehive, which was dedicated to basically bringing information around health, workforce development, education, and finance, helping people who had basic literacy issues be able to go online, be able to find information, and make it easy for them.

Over time as we have developed more applications, we decided that we needed to cover more issues like emergency preparedness, more online education, community news, civic engagement. So on December 11 of this year, we will launch this network made up of ourselves and many other partners called the Public Internet Channel. And our goal is really to provide information, engage people, and make it easy to take action. We do not want it to just be static. Here is information. But we want you to be able to go to a toolbox online and be able to click a button and be able to get that children's health insurance very easily, know what your eligibility is. We say we want people to be online not in line.

And so we are excited by that. We have even recruited people out of Hollywood to help us to make the content engaging. Barbara Townsend, who is a director/producer, is producing a program dedicated to single moms that will make it compelling and help them to be able to access information. So that network will start, Senator, late this year and then we will, in future years, go from there. We are collaborating with entities like PBS and other entities to bring that compelling content. So we do not produce it all. We are aggregating it and producing that content.

Senator KLOBUCHAR. Thank you.

Mr. RAMSEY. Thank you.

The CHAIRMAN. Thank you.

Senator Thune?

STATEMENT OF HON. JOHN THUNE,
U.S. SENATOR FROM SOUTH DAKOTA

Senator THUNE. Thank you, Mr. Chairman, for holding the hearing on this very important subject and thanks to our panelists for sharing your thoughts about what we can be doing, steps we can be taking to increase the availability of broadband and penetrate areas of the country that have not so far had access to high-speed Internet.

I just want to make a couple of quick observations and then ask really one question, which is a follow up to something that has already been asked.

But I am really concerned about the deficiencies that we have in rural areas. We have only got 31 percent of rural Americans who have home broadband connections compared with 49 percent of suburban residents, and 52 percent of urban Americans. And I really think this is a key when it comes to job creation and economic development in states like mine of South Dakota.

I have talked to people who have to our state to escape some of the hassles of living in the big city, like the wide open space, would like to be able to continue to work out of their homes to telecommute, but this is a real impediment in many parts of South Dakota.

I was talking to somebody who moved to our state from Texas just recently and located in the area of South Dakota that is very scenic and pretty but does not have high-speed Internet access. And it is a real problem if you are trying to continue to conduct business and commerce.

So I guess that is an observation, and I think it is something that the statistics that were up previously point to the need for steps on our part to correct.

I do want to home in on one point, though, that was made, and that is this whole issue of telehealth. You know, we fight every year for a few million dollars in appropriations for the Office for the Advancement of Telehealth and to try and get some demonstration programs funded actually that would yield results to the Government because the grants only go out to those entities that are then turning around and using those dollars to demonstrate that they are gaining efficiencies and actually making health care less expensive to the taxpayers through the Medicare program. But so far, we have not done a very good job.

And I know that question was already asked. But I guess I am just curious maybe from any of you a comment about what are the impediments in your mind to further expansion of telehealth as a way of providing health care to people in rural areas of this country and what steps might we take that would remove some of those barriers.

Mr. LINKOUS. If I could respond to that. First of all, Senator, thank you. You have been a tremendous champion for telehealth in the Senate, and I want to thank you for that publicly.

But our goal is to take telehealth, telemedicine, whatever you want to call it out of just the demonstration stage of having grants, which have been very, very important, but moving into the mainstream of providing medical care. To do that, it has to be, number one, fully reimbursed by Medicare. That is a major barrier that we

still have in the Federal Government today. Telemedicine is considered only a program for certain areas, for certain types of people, for certain types of services, and it is really a real limiting factor for the folks in your State as around the rest of the country.

So the one recommendation, if I had to make one single recommendation, is to open up Medicare reimbursement for telemedicine no matter who you are, no matter where you are, no matter what services you receive. It should be just the same.

Senator THUNE. Does anybody else have any thoughts on that subject? Yes?

Mr. COHEN. Yes. I would just say that, obviously, the speed issue matters in terms of telehealth, aside from the mapping in general for this country, which we do not even do. I think we could focus on bringing genuine high-speed Internet to clinics and health care facilities in rural America. I mean, if you do not have speed of at least 5 or 6 megabits a second, telehealth is going to be at a very low level. It has got to be two-way speed as well, not just downloading.

Mr. RAMSEY. And Senator, I would just like to add one other piece because, obviously, I concur with what was said. I think one of the things that we are seeing—and it was mentioned earlier that so much more is happening with disease management in the home. When we think of telemedicine, it is not only the important work that is done in clinics and facilities, but it is how do we facilitate and create a comfort level of people having these applications in the home. You look at diabetes. You look at some of these chronic illnesses. So much of the success of that patient is determined by what they do to manage their own disease, and much can be done if you have the technology in the home.

Dr. MAYOR. And just from an AARP perspective, we know that people want to age in their homes, and we recently did a survey. 96 percent, I think is the number in my head, of the respondents said that they would welcome the opportunity to have that telemedicine access in their homes. So it just reinforces the importance of having the broadband in the first place.

Senator THUNE. As Mr. Linkous mentioned, we have been trying, through these demonstration projects, to use remote monitoring technologies so that people can stay in their homes, and even that seems to be a battle every year to get recognized as an important thing to be funded and something that in the long run, like I said, I think has the possibility of actually saving tax dollars by making these programs more efficient and allowing people to stay in a home setting as opposed to having to go into an area where it would probably be much more expensive to the taxpayer.

So I just think that there we have really sort of missed the boat on that, and there is so much more than we can and should be doing. And I think ultimately it does come back to reimbursement. And we know that. And I know that in the initial stages that probably tends to be—people look at it and say, well it is going to be expensive. But I think in the long run, it is going to save money.

So I appreciate your testimony. I have some other questions I would like to ask, but I have got some places I need to get, Mr. Chairman. But I thank you all very much for your input.

The CHAIRMAN. This discussion is an important one today, and yet we have just two Senators here. I can see in my lifetime a hearing of this nature held with no one here. I may be officiating in my office and all the other Senators could be in their offices and all the witnesses in their homes or their offices just like the witness from Alaska.

However, there are two things that are in our way. One is a national broadband policy. We have not made it a policy to make this part of our communications system an important part. I look upon this development as just as important as the printing press, and it is a shame that we do not have this available to Americans. When you consider that only 25 percent of the low-income Americans have access to broadband and just slightly over half of all Americans have access to broadband, something is wrong.

So I would hope that with your organizations you can provide us with information as to what the costs would be because at this stage, we have no idea what the costs will be.

We know what the potential is. I was at a viewing of surgery conducted in Bangkok and supervised in Tripler in Hawaii. And it was fascinating to have a doctor or surgeon in Hawaii tell the Army surgeon in Bangkok, go to the left or go to the right or what have you, and successful.

But it is going to cost money and we have no idea how much it costs. And if there is no American government policy supporting this, then it becomes a political issue, an earmark. Well, I am willing to put in an earmark, but I would like to know how much we need and how can we justify that.

When you consider that most of our homes in the United States have no computers, then something is wrong.

So you would be doing us a great favor and yourselves and the people of the United States, if you would give us the facts.

We have, for example, something that is going to happen in a few months, February 17, 2009. We will change from analog to high definition digital television. 21 million Americans rely upon over-the-air television with rabbit ears. They are going to be several thousand Americans waking up on the morning of February 17 next year and find that the TV does not work.

I would hope that we can do better than that. After all, we are the pioneers that discovered the computer, that came up with broadband, and yet we find ourselves doing a little better than Third World countries. I think we should do better than that.

So you would be doing us and the country a great favor if you could feed us—and I can assure you we are hungry for data. We are hungry for facts. If you have any right now as to what do you think it will cost and what sort of plan we should have—these things are not in place yet—that is what I want to know. Anything you can provide us at this moment? Mr. Cohen?

Mr. COHEN. Yes. We can bring in better data than I can give you.

But again, it is a question of the cost to pass the house and then creating the demand so people take it up. So you actually do not need huge public expenditures if we can stimulate demand and aggregate demand. So, again, to provide essentially what I guess now would be about 15 megabits per second, which still would leave us behind Korea and Canada—that is probably on the average—again,

it depends on where the house is, but on the average in the U.S., it would cost $300 a house to pass the house with that level of service. 100 megabit service is three times that because you have to actually bring fiber to the premise itself, whereas on the sort of 15 megabits, you can bring it to the neighborhood within five-eighths of a mile. Now, again in rural areas, whether it is Hawaii or Alaska, that is more of a challenge.

Fourth generation wireless, which is just being built, can provide high-speed Internet as well, probably at least 5 or 6 megabits a second, probably at a lower price. But that is just being built. So we are not sure sort of how that works. And that would be with a cell site two or three miles potentially from a house. So it could be very valuable.

Again, Japan—my colleague here, Mr. Morishima, could tell you that in Japan the fourth generation wireless is already built.

So I think a lot of the questions you raise are pretty deep questions about, A, we have no mapping; B, we have no goals; C, we do not have the right incentives to get ourselves the cutting edge technology at the same speed that countries like Korea and Japan do because the national broadband policy is there, as well as in countries in Europe.

And we will bring you more information.

The CHAIRMAN. Mr. Ramsey? Anyone else who would like to contribute something today?

Mr. LINKOUS. Senator, although we do not have specific information on some of the costs of deployment, I think there are increasing numbers of studies and research that have shown some of the benefits in financial terms to the Federal Government of deployment of broadband applications, particularly in health care, and we will be glad to supply that information to the Committee.

Mr. RAMSEY. And Senator, we would do the same on the other applications, particularly around education and workforce development, the demand side applications that are important to go along with the other infrastructure applications.

The CHAIRMAN. All of you have used the word "demand." How do we develop this demand?

Mr. RAMSEY. I think, Senator, Mr. Chairman, the issue is to look at a variety of subject matter areas in terms of applications. So we spent a lot of time talking about a very important one in terms of health, whether it is disease management, telemedicine. That is an application sort of on the demand side. But so is education. So is workforce development, the kind of online content that needs to be available at an assessable literacy level and in multiple languages. And so when we talk about demand, it is when a person sees that application and says, boy, I want to go and spend some money to have broadband in my home because I want that application myself. And so when we talk about demand, that is what we are talking about.

That is why we have been working on creating this channel online to bring together public purpose type information in these areas, and that is the kind of support that we are looking for and it is on the demand side.

Dr. MAYOR. I would just add to that that I think another thing that would help on the demand side is the easier systems are to

use, the more intuitive they are. I think the world divides these days into two categories: people who think if they hit the wrong button on the computer, it will explode; and people who think that you just have to keep hitting until something good happens.

[Laughter.]

Dr. MAYOR. Those strategies are fine, but we need to be sort of veering more to making it as easy as humanly possible, as intuitive as humanly possible, to take away that sort of technology phobia that at least some people still have. It is not a problem for the very young, but for the rest of us.

Mr. LINKOUS. Mr. Chairman, I think the concept of needing to create demand is a somewhat fleeting issue because I think we are going to have tremendous demand very shortly. In the field of health care alone, we were worried in telemedicine that people would not accept it, but in fact, consumers not only are accepting it in every case that I am aware of—in every study that I have ever seen looking at demand, they have not only accepted it, but they want more. I think if we see the health care applications that are being built to the wireless devices into the home, into the new games that people are using throughout the country, that is only going to expand. So I think if we have broadband available, there is no doubt in my mind that the applications and the interest of Americans are going to just explode.

The CHAIRMAN. I would like to thank all of you, especially our friend from Alaska in Bethel, Alaska, Mr. Peltola. You have just demonstrated that it works.

[Laughter.]

The CHAIRMAN. And I think to further demonstrate this one of these hearings—I think I will convene one without witnesses present here or Senators present in the room to demonstrate that it can work.

I thank all of you, and if you can provide with us additional data, information, I would appreciate that very much.

With that, adjourned.

[Whereupon, at 12:11 p.m., the hearing was adjourned.]

A P P E N D I X

PREPARED STATEMENT OF CHARLES TOWNSEND, PRESIDENT AND CEO, ATLANTIC WIRELESS L.P.

Mr. Chairman, I am Charles Townsend, and I am President and CEO of Atlantic Wireless Limited Partners. Atlantic Wireless has purchased over $100 million of Advanced Wireless Spectrum (AWS) licenses and is the 9th largest owner of AWS licenses in the U.S. From 2002–2008, I was the President and CEO of Aloha Partners. Aloha Partners was the largest owner of 700 MHz spectrum in the United States until the spring of 2008 when it sold all its licenses to AT&T. Aloha covered over 200 million people with 12 MHz of spectrum on former UHF channels 54 and 59. I am submitting this written testimony to further the discussion on the importance of broadband to rural communities across America and the contribution that auctioning "white space" can make to ensuring that rural areas have access to high-speed connections.

United States Lagging

The public's airwaves are a vital national resource, and their use should always be geared toward improving the broad public interest. Sen. Inouye has said that "Broadband communications have become the great economic engine of our time" and I do not believe that anyone would disagree with him. The U.S. faces difficult challenges because the rest of the world has embraced broadband as a crucial part of their economic future. Various well-known studies have shown that the United States trails Japan, South Korea, Canada, France, Finland, and a host of other countries in Internet connectivity. One of the main reasons that the U.S. is not at the top of this list is its abundance of rural areas. It is estimated that between 15–20 percent of U.S. households cannot receive broadband service. The majority of these households are located in rural areas where it is too expensive to provide traditional broadband service.

A recent study by the Communications Workers of America concludes that "all too many Americans encounter a significant digital divide. Families in rural areas are much less likely to subscribe to broadband. According to surveys, while 57 percent of urban households subscribe to broadband, only 38 percent of rural households do.

The questions is then, how do we maximize broadband access and specifically in rural areas. We need high-speed Internet for our homes, schools, hospitals, and workplaces. Speed defines what is possible on the Internet. It determines whether we will have the infrastructure required to create the jobs of the future, develop our economy, and support innovations in telemedicine, education, public safety, and public services to improve our lives and communities. High-speed Internet is even more crucial to underserved rural areas because it is the best and most realistic solution to the rural/urban technology divide. High-speed Internet offers the chance to revitalize rural economies faced with the ever increasing shift to an urban, technology-based economy. Wireless broadband offers a solution to the challenge facing us. Wireless broadband has the potential to cover large geographic areas at low cost.

"White Space" Auction Offers Solution

The auctioning of "white space" would foster the development of wireless broadband in rural areas because over 200 MHz of spectrum is available in those areas. To put this amount of spectrum in perspective, it is over 3 times the amount of spectrum as was auctioned in the recent 700 MHz auction. In addition, the licensed spectrum permits maximum power, and significantly reduces interference issues. The amount of spectrum and the power available make the "white space" extremely valuable in rural areas, as it would allow a licensed owner to provide service over a large geographic area at a low cost. Further, an auction of licensed spectrum could provide the collateral needed to finance wireless broadband build-outs in rural markets. Unlicensed spectrum will not. An additional benefit is the potential windfall for the Federal Government. A study done by the Brattle group states that that the government could receive $12–24 billion by auctioning "white space."

Certainly, given the current economic climate and the position the government finds itself in, any significant source of additional Federal revenue must be pursued.

Currently, very few wireless broadband networks operate in rural America today. The type and amount of spectrum needed for these wireless networks has not previously been available to rural wireless carriers. Outside of a licensed "white space" auction rural areas are unlikely to get broadband service because it is too expensive to build fixed networks.

Engineers have estimated that a licensed signal can travel up to 30 miles in rural areas, while an unlicensed signal can travel only up to 4 miles. (This calculation is based on a typical power of 1kW for the licensed spectrum compared to 1 W for the unlicensed spectrum.) This difference results in more than a 50-to-1 coverage advantage for the licensed spectrum. In other words, there would need to be roughly 50 unlicensed cell sites for every licensed cell site. The only way to succeed in providing broadband to rural areas is on a licensed basis so that power levels can be maximized and interference can be reduced.

The National Telecommunications Cooperative Association (NTCA) recently conducted a survey of its membership about wireless broadband issues in rural areas. NTCA represents over 580 small and rural telephone companies throughout the U.S. Seventy-three percent of NTCA's members indicated that they would prefer access to additional licensed spectrum over additional unlicensed spectrum.

Unlicensed Spectrum Wasteful

On the other side, opponents of licensing "white space" promote in-home networking and improved WiFi as likely uses of the spectrum, but using the spectrum for low-power, short-range services like these fails to take full advantage the "white space." The widely cited Brattle group reply comments before the FCC state that the "white space" is "overqualified" for such low-power, short-range services. Using "white space" for this purpose would "amount to using land in downtown Tokyo to grow rice."

Some spectrum utilization studies, including the NSF Spectrum Occupancy Measurements Project Summary, suggest that there are many licensed frequency bands that are underutilized. However, this initial conclusion is deceptive. Most of these are frequencies in the 1240–1710 MHz bands. Much of the spectrum in the 1240–1710 MHz bands is licensed to non-commercial operations. If you compare the unlicensed PCS band (2390–2500 MHz) to the licensed PCS band (1850–1990 MHz), the studies consistently come to the opposite conclusion. Licensed PCS frequencies are utilized significantly more than the unlicensed frequencies. In 2004 and 2005 the National Science Foundation studied spectrum utilization in seven different locations throughout the United States. In six of those seven locations, licensed PCS spectrum is utilized significantly more than unlicensed PCS spectrum.

Unlicensed Spectrum Finds Few Customers

A significant number of experiments with unlicensed WiFi in major Metropolitan areas have not worked. In every instance, including in San Francisco, Philadelphia, and New Orleans, these experiments have failed. A lack of funding was not the problem: EarthLink spent more than $50 million building unlicensed WiFi operations in these cities. These experiments failed due to lack of demand. EarthLink expected over 100,000 customers in Philadelphia in the first year. In spite of extensive marketing, EarthLink attracted only 5,942 subscribers.

The reason for these consistent failures was simple . . . no customers. Even in Google's own backyard, no one has attracted enough customers to make unlicensed WiFi viable. Since the unlicensed system has failed in these urban centers, claims that unlicensed usage of "white space" will lead to greater rural broadband access must be viewed with great skepticism.

In conclusion, it is imperative that we bring broadband to rural America, and the only practical way to do that is through licensure of "white space."

PREPARED STATEMENT OF THE AMERICAN HOMEOWNERS GRASSROOTS ALLIANCE

The American Homeowners Grassroots Alliance (AHGA) commends the Senate Commerce Committee for holding this hearing on Why Broadband Matters. AHGA is an independent national consumer advocacy organization which focuses on policy issues that have a significant economic impact on the nation's 75 million homeowners.

Broadband is having a dramatic and positive impact on the Nation's 75 million homeowners as well as other consumers. It is silently helping to address some of the most serious immediate challenges facing the U.S. For example, the recent drop in gasoline prices has been attributed in large part to reduced gasoline demand as

consumers made conscious efforts to drive less. While some of that reduction is the result of consumer decisions to forgo vacations, much of it is undoubtedly a result of the increased use of Internet commerce and teleworking. Broadband is essential, in many cases, for both. During this crisis more consumers have been buying products and services online rather than driving to the mall, and more employers are letting their workers telecommute on a temporary basis to help them cope with the high prices of gasoline. By providing an increasingly viable option to hydrocarbon energy consumption in many endeavors, broadband has revealed its ability to help the environment and stabilize energy costs that will be enhanced as broadband penetration increases.

The impact of broadband will continue to grow as the variety and sophistication of broadband applications expands, and as the number of homes with broadband access, now over 50 percent, continues to increase. The scope of broadband's impact on society is already breathtaking:

For families. Broadband is changing the way families learn, communicate, play and prepare for their future. Critically important information about health care, scholarships, colleges, jobs, and community life such as e-government or registering to vote is increasingly on the Internet, and sometimes only on the Internet.

For consumers. Broadband has transformed commerce. Just about every product or service can be purchased on the Internet, and consumers can find products and services they would never have found in an offline world. E-commerce growth rates continue to outstrip offline retail sales. E-government is increasingly important to consumers and businesses, saving both time and money. Already more than 14 million Americans have placed a telephone call over the Internet.

For workers. The number of teleworkers is increasing rapidly. More than 12.4 million Americans telecommute full-time. Thanks to incentives created for Federal agencies, 7 percent of the Federal workforce now telecommutes. Since they do not drive to work, home-based small business owners and teleworkers are helping to reduce rush hour traffic jams for other workers as well. A recent survey of members of the American Institute of Architects revealed that home offices are the most popular special function room of new home buyers for the third year in a row.

For rural Americans. Nowhere is broadband opportunity as profound as it is in rural America. In too many rural communities, because jobs have migrated to urban areas, high school graduates often feel they have only two choices—go away, or go nowhere. Broadband is the connection to new markets, new jobs, and to distant family and friends.

For healthcare. Health IT technologies are dependant on the proliferation of broadband. Those technologies will improve the efficiency of healthcare and significantly reduce its costs. Health IT legislation will enable privacy-protected complete personal medical records to help doctors greatly improve diagnoses and treatments. Broadband will enable effective remote face-to-face consultations between healthcare providers and patients. A new generation of wearable medical monitoring devices now under development will enable millions of chronically ill to remain in their homes while their conditions are remotely monitored 24/7. They will also help many of the 54 million Americans with disabilities to remain in their homes and/or lead more productive lives. Collectively, these technologies will save seniors alone more than $800 billion by reducing health care costs.

For seniors. Our society continues to shift from the geocentric extended families of our nation's early history. Older Americans today are far more likely to live an extended physical distance from their children, siblings, other family members, and the friends of their youth. As AARP pointed out in its testimony to the Committee, "High-quality broadband networks have the potential to make the world more accessible to persons over age 50, providing convenient pathways to the economic and social activities that are not only vital for leading comfortable and meaningful lives, but also for fostering and sustaining livable communities. Creating livable communities is an important policy goal for AARP. More than just a concept, livable communities seek to combine diverse and affordable housing, adequate mobility options, employment opportunities, entertainment and supportive community services to allow persons of all ages to remain independent, active and engaged."

For homeowners. Today over 80 percent of home buyers use the Internet in their search for new homes as well as home financing. This saves them tremendous amounts of time. Home sellers can list their homes in multiple listing services (MLS's), which will distribute the listings to hundreds of real estate broker websites for as little as a few hundred dollars. Websites like Craigslist are becoming more important factors in real estate transactions, and home sellers or agents can put listings there for free. Because sellers and buyers in the broadband era need less support from real estate agents, broadband is also helping to reduce real estate sales commission rates. According to U.S. Census figures and IDC, a national re-

search firm, at least 18 million of the approximately 36 million home office households in the United States are home-based businesses. Many of them are Internet-centric businesses which are heavily dependant on broadband, such as the millions of eBay Power Sellers who derive all or much of their income from Internet commerce, service businesses such as website designers, real estate agents, mortgage brokers, and millions of other home-based businesses.

For the environment. The shift to home-based teleworking is helping reduce environmental pollution and global warming. By transforming existing rooms in their homes into offices, telecommuters and home based businesses reduce the need for the construction of new commercial office space, which helps the environment. A study by TIAX LLC determined that a full time telecommuter who lives 22 miles from his or her workplace would save 320 gallons of gasoline and reduce CO_2 emissions by 4.5 to 6 tons per year. At $3.00+ per gallon gasoline prices, they would also save teleworkers about $1,000 in cash annually, not including savings in automobile insurance, maintenance costs and depreciation resulting from those trips. Home based business owners avoiding commutes to a separate office the same distance away would save the same amount.

For the economy. Ubiquitously available broadband could:

- reduce the costs of Federal, state, and local physical transportation infrastructure investments, both for expansion and maintenance.
- create an estimated $500 billion in economic growth.
- create more than 1.2 million high-wage jobs.
- strengthen America's global competitiveness.
- boost business productivity—which is essential to raising standards of living for all families in America.
- allow small businesses to reach global markets.

For Homeland Security. In a study of the communications failures on September 11, 2001, the National Academies of Science found that the Internet held up better than other communications technologies. On 9/11, 95 percent of cell phone calls at 11 a.m. failed to get through, the central office for the phone system cutoff 300,000 landline phones, television stations were knocked off the air, and police and fire department radios failed. By contrast, only 2 percent of Internet addresses remained off-line for an extended period. 9/11 demonstrated the Internet's overall resilience to attacks through its flexibility, and adaptability. But 7 years after 9/11, America has not done enough to advance the broadband Internet technologies that can help avoid future communications failures.

For public safety. Hurricane Katrina highlighted the fragility of the emergency communications system in this country. During Katrina, 38 Public Safety Answering Points (PSAPS) failed, preventing 911 calls from being answered. Connecting public safety answering points to broadband, like we've connected schools and libraries, will strengthen the emergency responder communications network.

For government. Universal broadband could also have important advantages for the government itself, allowing government workers to communicate in more geographically-dispersed locations in an emergency. In the event of a major 9/11-type attack on Washington, offices could be inaccessible but employees will still need to communicate. Federal workers using broadband enabled phones could immediately work from home or other broadband enabled location—improving continuity of government. Many government agencies are already making the switch to broadband enabled voice services, but without broadband at home, workers can't connect.

For business. Broadband has greatly enhanced business productivity and enabled small businesses, including home-based microbusinesses, play on a much more level playing fields against larger competitors. A small business today can create a website using user-friendly templates and maintain their website for $20 a month or less. For products that can be shipped electronically (movies, software, etc.), transportation costs associated with physical products are eliminated, because the customers' Internet service provides the transportation.

To help make the aforementioned benefits available to all in society we must make broadband accessible to all. To achieve that objective, AHGA recommends that Congress undertake the following specific actions:

- Promote a non-partisan broadband debate. The current broadband debate has become very partisan, ideological, and acrimonious. Yet the benefits of expanded broadband access are not a matter of partisan differences. Legislators can demonstrate their leadership and maturity by helping to bring a more thoughtful tone to the debate in the future. Members of Congress, and leaders of consumer and business organizations, need to recognize that our progress is dependant on

reaching consensus among most or all of the key players. No segment of the consumer, business, or political community can expect to achieve all of their goals. Progress will have to come in incremental steps, and compromises will be necessary even as we move forward incrementally. It is far better to devote our energies to finding areas of common ground that will move us toward the ultimate goal than to expend energies trying to deny any success to those who disagree with us.

- Pass broadband mapping legislation. Broadband mapping will collect accurate data that will reveal the extent and distribution of current broadband deployment, enable us to forecast trends, and identify areas where additional measures are required. It will also help defuse differences of opinion regarding the types and seriousness of the challenges to further broadband deployment. The information that S. 1492, the Broadband Data Improvement Act passed by this Committee, and House-passed legislation H.R. 3919, the Broadband Census of America of 2007, will help both the Federal Government and local communities and states assess their broadband inventory. That information is critical to intelligent planning and resource allocation going forward.
- Make smart government investments in this critical infrastructure. The nation's resources are limited, and both existing programs and any new resources brought to bear on the challenge must be made to work with maximum efficiency. Existing programs such as the universal service system are still oriented to outdated consumer communications needs and old communications technologies. The universal service system needs to be modified to better support the goal of deployment of high speed Internet for all. We also need to invest more public funds in efforts to improve digital literacy, provide broadband access and needed hardware are to low income households, support public/private partnerships, and make low interest business loans available to spur deployment of faster, second-generation networks.
- Create new economic incentives to spur the demand for broadband services and/or reduce the cost of deploying broadband services. Laws that have effectively expanded telecommuting by Federal workers need to be complimented with similar incentives in the private sector. A $2,000 tax credit for technology equipment and broadband service expenses required to establish home offices for workers and home-based business owners would encourage more employers and workers to shift to teleworking, just as the $2,000 hybrid vehicle tax credit has encouraged more commuters to choose more fuel efficient cars. Congress should enact a permanent, nationwide, state and local sales tax holiday on goods and services that are sold over the Internet. Exempting Internet sales from state and local sales taxes was supported by 85 percent of the 3,125 survey respondents in a 2008 Parade Magazine readers survey. Such an exemption would spur Internet commerce and the demand for broadband services. State and local governments would benefit from a reduced need for new transportation investments and maintenance, and society would benefit from the many other economic and environmental benefits of e-commerce. Tax credits or other incentives tied to accelerating the build out of networks and upgrading them to second-generation capability should be provided to broadband and cellular service providers.
- Support niche opportunities to take advantage of new broadband applications. Much progress has been made in narrowing differences in health IT legislation in this Congress. It would be a great step forward if Congress could pass health IT legislation this year. If time does not permit action in this Congress, passage of health IT legislation should be moved to the top of the priority list next year. Congress should continue to seek similar niche opportunities to take advantage of broadband technology in other areas in the future.
- Remove major barriers to broadband adoption. Privacy issues are a serious threat to consumers. They slow both Internet use and broadband adoption. Congress must take steps to address threats to privacy, security and safety.

The most serious is identity theft, which has a very adverse effect on consumers when it occurs, and is also discouraging many other consumers from taking advantage of the benefits of Internet Commerce. A recent University of Michigan study determined that up to 75 percent of all bank websites have security flaws resulting from poor website design that make them susceptible to hacking. Federal privacy legislation should establish reasonable basic minimum security and privacy for online activity. These standards should not be so rigorous that they would impose undue burdens on home-based and other small businesses which incorporate Internet commerce in their business models.

A new and growing threat to consumer privacy, security and safety are new technology applications that provide high quality, ground level pictures of residential neighborhoods, which have been made available on the Internet without the consumer's advance knowledge or permission by companies such as Google (Street View), Mapjack, EveryScape Inc. and Povo Inc. Ground level view technologies enable anyone with Internet access to drive virtually, undetected, and very efficiently through residential neighborhoods and peer into the windows of peoples' homes, and view what they were doing inside their home or elsewhere on their property. Personally embarrassing photographs from these services have been widely republished on the Internet. The degree of invasion of someone's privacy and potential risk of damage to someone's career posed by these tools is many times greater than that posed by a neighborhood busybody, and these tools create security threats to consumers as well. The Pentagon has prohibited Google from publishing its "Street View" content of U.S. military bases and the Department of Homeland Security has reportedly asked Google not to release its street views of the Washington, D.C. area out of concern that the pictures may be used by international terrorists to plan attacks. These new tools can just as easily be used by domestic criminals as they can by international terrorists. They make it far easier and more efficient for potentially violent burglars, car thieves, and other criminals to plan their crimes. These companies should be required to get advance opt-in permission from consumers before posting pictures of consumers' homes on the Internet.

Another privacy issue involves tools companies use to track consumers' online activities across the entire Internet in great detail. The tracking done thus far using tools such as "deep-packet inspection", and other advance technologies used by companies such as Google and others to track consumers' activities across the Internet has been done without consumers' advance knowledge or consent, and outside the bounds of consumer expectation.

Companies that track consumer Internet activity in great detail beyond their own company's website should be required to get advance opt-in permission from consumers before tracking types of online behavior that consumers have a reasonable expectation of privacy.

We thank the Senate Commerce Committee for this effort to help understand the many benefits that broadband is delivering to society. The Alliance also appreciates the opportunity to provide these suggestions to help speed broadband adoption in the U.S. We look forward to supporting this Committee's efforts to make broadband as universal as telephone service is today and bring its benefits to all Americans as soon as possible.

PREPARED STATEMENT OF THE INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS-UNITED STATES OF AMERICA (IEEE-USA)

IEEE-USA is delighted to submit this statement to the U.S. Senate Commerce, Science and Transportation Committee. IEEE-USA advances the public good and promotes the careers and public policy interests of the 215,000 engineers, scientists and allied professionals who are U.S. members of the IEEE.

IEEE-USA congratulates Chairman Daniel Inouye and the Senate Commerce Committee for supporting S. 1492, the "Broadband Data Improvement Act," and supports passage of this important legislation.

Universal access to high-speed broadband data services is as imperative to our nation's economic prosperity in the 21st century as universal access to electric power and telephone services was in the 20th century. Broadband services enable telecommuting, distance learning, improved medical care, gateways to vast sources of information, and a host of other economic and quality-of-life opportunities. As with electricity and telephone service before it, new Internet applications generate economic and social gains that far exceed the investment in the enabling infrastructure.

The various members of U.S. consumer households of the near future will be needing access to many broadband applications all at the same time. The children do their homework, the breadwinner works part time or full from home, the grandparents keep in touch with their doctors, and some of them seek help from their governments on taxes, social security, Medicare, business, energy, housing, and public safety. The aggregation of these simultaneous applications in the home, together with entertainment, will drive the future demand for broadband.

Although the United States can legitimately take credit for development of the Internet, we cannot claim that our nation leads in providing access to it. Many countries have recognized the benefits of high-speed broadband data services and have dramatically expanded both the availability and speed of their national networks. Such investments provide competitive advantages that must not be ignored.

We must meet these challenges with new cooperative initiatives between the U.S. Government and the U.S. communications industry. These efforts will require strong national leadership focused on development of new policy and regulatory frameworks to stimulate investment in the enabling infrastructure for extending national access to the Internet; its widespread use; and competition in its facilities, service provision, and content.

IEEE-USA urges the U.S. Congress to create incentives for the provision of universal and affordable high-speed broadband access to new and demanding Internet applications. Such access will bring consumer benefits to education, job opportunities, telemedicine, and access to government resources. Beyond these benefits, such access will stimulate innovation, spur economic activity, and contribute to increased productivity for the Nation.

To achieve these benefits IEEE-USA recommends the following actions covered at greater length below:

- Designate universal and affordable access to high-speed broadband networks as a national priority and establish a series of bandwidth goals and target dates for deployment.
- Provide economic incentives for broadband investments and uses that qualify as furthering our national objectives.
- Foster further competition in facilities, service provision, and content through legislation and regulation.

The United States Faces Challenges for its Broadband Infrastructure.

Current levels of speed and access fall short of evolving demand. The Federal Communications Commission's (FCC) prior definition of broadband speed was 200 kilobits per second (kb/s). Recently the FCC replaced this definition with seven broadband tiers starting at 768 kb/s and extending to speeds greater than 100 megabits per second (Mb/s). Five principal technologies currently deliver broadband within these tiers:

- Cellular telephony
- Digital Subscriber Line, offered by telephone companies
- Cable modem, provided by cable companies
- Wireless Fidelity (Wi-Fi) networks
- Optical fiber to the home or the neighborhood
- Satellite.

Availability and data rates vary widely within each of these technologies, so that tabulation of their capabilities here would necessarily be incomplete and subject to change. However, typical data rates currently increase from about 0.5 Mb/s for the newer cellular telephony systems progressing to 20 Mb/s for optical fiber to the home. Optical fiber so far is available only in limited service areas compared with Japan, South Korea, and France.

As microprocessor and broadband capabilities expand, new computing applications emerge. This is the story of technological progress in all fields. Many studies cite examples, just a few of which follow:

- Convergence of voice, data, and video into bit streams carried on digital networks.
- Widespread bidirectional video conferencing, useful in education and business.
- High resolution medical images and electronic medical records transferred for diagnosis and consultation.

These new applications can be used on the Internet now, but can experience delays in delivery where the Internet is not robust enough to handle the additional traffic they induce, as well as impact the user experience of any others sharing the same portion of the Internet.

The market is advancing U.S. broadband deployment, but at a pace limited by each individual provider's perceived return on investment. The result is twofold: we face inadequate provision for coming demand and we lack parity among world-class networks. To encourage faster progress, initiatives beyond ordinary market forces are needed.

Priority Action Will Return Rewarding Benefits to Consumers

All levels of education are using broadband. Images and videos enrich the primary grades in science, music, art, and current events. High school students research material for their arts and their sciences assignments. Almost every higher educational institution makes its entire curricula available on its websites, either for fee or for

free. For example, the University of Maryland University College enrolls 90,000 students worldwide, mostly in distance learning courses otherwise unavailable to working adults because of location, schedule, and duties.

Telework and telecommuting enable people to join in the workforce who would otherwise be excluded by reason of location, mobility, age, or cost. However, these applications are most effective with ample bandwidth for fast transfers of large files and interactive video. Additionally, the very investment needed to expand the broadband infrastructure will create skilled jobs in U.S. industry in rural areas and across the U.S.

Broadband is improving both the efficiency and effectiveness of health care delivery through rapid access to medical records, detailed medical imagery, video patient diagnosis and monitoring, and even telesurgery for patients unable to get to a qualified surgeon. These applications use bandwidth beyond what is generally available now.

More extensive Federal and local government use of broadband facilities and services could provide superior services to its citizens in law enforcement, emergency management, health, housing, and business.

Telemedicine

Increasing health care costs and an aging population are placing significant strains upon the U.S. health care system. Small pilot studies have shown that meeting seniors' needs for independence and autonomy, coupled with expanded use of home health technologies, mitigate against these circumstances and provide improved health outcomes. Difficulty with reimbursement policies, governmental approval processes, and absence of efficient deployment strategies have hampered adopting such technologies.

These technologies can reduce or eliminate the need for personal services in the home and can also improve treatment in hospitals and nursing care facilities in rural areas and other environments. IEEE-USA believes that using electronic technologies to assist and monitor elderly, disabled, and chronically ill individuals in the home can improve quality of life, improve health outcomes, and help control health care costs.

IEEE-USA urges Congress and policy-makers, in both the public and the private sector, to take the actions needed to expand uses for electronic devices, assistive and monitoring software, and home health communication technologies to provide home health care to those in need. Further, we support developing guidelines for reimbursement of these technologies—both for developers and users.

Universal Access Will Return Rewarding Results in Other Fields as Well

As networks connect larger numbers of people, disproportionately positive economic and social benefits accrue to society because the possible interactions grow faster than the number of subscribers.

Economically, broadband networks have been shown to spur growth through productivity, new and augmented markets, expanded work force, innovative products and services, and research. This occurs by speeding the diffusion of ideas and procedures throughout individuals and organizations, so that the direct benefits diffuse throughout the society as a whole. In rural areas, facilities ownership by enterprises and communities is providing expanded capability in sparsely populated markets, thus enhancing local economic opportunity and richness of life. Faster and more available wireless access can expand mobile commerce and create new multimedia applications such as mobile video telephony. The broadband infrastructure can enable energy efficiency as well as substitute for other resources, such as use of the transportation infrastructure, medical examination and advice, and paper-based records.

National security and public safety can be enhanced by a robust Internet. The Internet's fundamental design provides redundancy in case of isolated failures; however, best practices for critical infrastructure protection must be employed to ensure improved robustness and survivability from both natural and man-made disasters.

Socially, such networks have been shown to enrich the quality of life, and to diminish the disparity in access between rich and poor, urban and rural, and ethnic groups.

Globally, high-performance networks will enable the United States to match or exceed services and applications available to the citizens or trading partners of other nations, with consequent competitive advantages.

Government Has Options for Constructive Action

Designate deployment of high-speed broadband networks as a national priority and establish a series of bandwidth goals and target dates for deployment.

- The President and Congress have a chance to provide vision and leadership by giving priority status to high-speed broadband deployment and access. Such leadership will close the widely publicized gap in penetration, access, and price between the United States and countries like Japan, South Korea, and Europe.
- Initially, we advocate the achievement of 20 Mb/s bidirectional speed with 90 percent availability throughout the Nation within 5 years. The wide penetration of such speeds will achieve most of the expected benefits and accommodate numerous simultaneous applications per household or small business. Of course, greater speeds can be had by those with greater needs.
- We further advocate the achievement of 100 Mb/s bidirectional speed with availability to all businesses and households within 10 years. The technology necessary to meet this goal is scalable to almost any future need at inexpensive upgrade costs.
- Create a national annual census of broadband availability and usage to monitor progress toward the goals, identify competitive opportunities, and reveal underserved areas.

Provide economic and other incentives for broadband investment and use.

- The government should reaffirm and extend tax incentives to private sector broadband investment. These include expensing of certain investments, accelerated depreciation, R&D tax credit, matching grants, and guaranteed loans for broadband deployment in underserved areas including use of the Universal Service Fund.
- Other incentives would include deductions for certain broadband subscriber expenses that further education and health care.
- Additionally, to stimulate use and demand, provide programs to increase digital literacy.

Foster competition in facilities, services, and content.

- Competition among providers and technologies can be relied on to provide wider deployment, higher speeds, and lower prices just as it has in other countries. The following actions will foster such competition:
  - Rescind legislative and regulatory restrictions on deployment of end-user owned wired and wireless networks by municipalities and other communities wherever these provide capability in the absence of adequate, cost-effective, or timely commercial services.
  - Encourage negotiation between service providers and facilities providers for access to the physical infrastructure, so as to realize the benefits of innovation, content diversity, end-user choice, and competition.
  - Recommend network benchmark tests for broadband performance and continually redefine them as usage and technology evolve. Different broadband technologies have more than raw speed differences. For the competitive marketplace to work in selecting broadband alternatives there must be information on the alternatives. Thus users can select the performance best for their particular needs.

Additional initiatives will also encourage broadband investment and use.

- The FCC should designate ample licensed and unlicensed spectrum bands, including unused portions of television bands, for high-speed wireless networks, ultimately aiming at access for all. This action will expand mobile and nomadic services and augment access to the wired infrastructure.
- Appropriate government agencies should step up their network acquisitions to stimulate demand.
- The National Science Foundation, other funding agencies, and industry should assure research levels for hardware, software, applications, and standards that are sufficient to spur continuing technological development, as Japan and the European Union are doing.

The above Considerations Support the Following Conclusions

The capabilities and benefits of widespread, advanced broadband networks are achievable by visionary national policies and leadership, enabling cooperative government and industry initiatives. Such networks are necessary for attaining and sustaining U.S. technological and competitive advantage in the global economy. Once in place, such networks reduce bandwidth constraints, thus opening a new era of innovation for knowledge-based goods and services.

RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. JOHN F. KERRY TO LARRY COHEN

Question 1. If this hearing is to act as a jumping off point for next Congress, and for the next Administration, can you each give a policy recommendation for how to go about deploying broadband to every American? What policy initiatives should be included in the President's national broadband Strategy? What can be accomplished at the FCC? And what initiatives should be taken by the Federal Government to increase understanding and information in order to improve demand on the part of the consumer?

Answer. There are a number of immediate steps that the next Administration, Congress, and the FCC can take to achieve the goal of affordable, high speed Internet for all Americans.

First, the President's broadband strategy should establish a national broadband policy goal. A reasonable initial goal would be to construct an infrastructure with enough capacity for 10 megabits per second (mbps) downstream and 1 mbps upstream by 2010.

Second, Congress in partnership with the states should fund a program to map broadband infrastructure. We still do not have detailed national information about where broadband deployed and at what speeds. The next Congress should make it a top priority to authorize and appropriate funds to implement S. 1492, the Broadband Data Improvement Act, (Public Law 110–385), which provides grants to states to conduct broadband mapping and to create public-private partnerships to aggregate demand.

Third, the FCC should reform the universal service program. Today, universal service subsidies support voice telephony service. The FCC should move forward immediately to reform the universal service program to support build-out of broadband networks in rural high-cost areas and subsidies for low-income households for Internet access and equipment.

Fourth, Congress should adopt tax incentives, low-interest loans, and grants to stimulate build-out of high-speed broadband infrastructure. Other countries such as Japan, South Korea, and Sweden have spurred the deployment of faster networks through such programs. Congress could adopt such incentives as part of an infrastructure stimulus package designed to jump-start the economy, create jobs, while investing in 21st century broadband infrastructure.

Fifth, Congress in cooperation with the states should fund programs to stimulate demand for high-speed broadband networks, including community-based digital literacy programs, grants for broadband applications and services, and programs that provide free or low-cost computers to low-income households. A Digital Ambassadors program could be considered as part of a job-creating stimulus package.

Question 2. Massachusetts Governor Deval Patrick proposed and passed with the cooperation of the legislature an initiative to fund next generation communications infrastructure through state issued bonds. Is this a strategy that makes sense in your mind? Is it an idea that has merit at the Federal level?

Answer. There is merit in exploring a Federal program that would support investment in next-generation communications infrastructure through an infrastructure bond program. Such a program should be structured to lower *private sector* capital costs for investments in next-generation communications infrastructure. In addition, it is worth exploring other programs that would lower private sector cost of capital for investment in next-generation networks such as accelerated expensing of investments in high-speed next-generation networks, investment tax credits, and competitive matching grants.

Question 3. There has been talk about a second stimulus package, and the value of including infrastructure improvements in such a package. Could you speak to how public funds directed at infrastructure improvements—whether they be roads, bridges, railroads or communications networks—can build jobs and stimulate the economy?

Answer. Public funds directed at infrastructure improvements—whether they be roads, bridges, schools, or communications networks—can build jobs and jumpstart the economy in the short-term, while investing in the 21st century infrastructure to assure long-run economic growth. Moreover, advanced networks support innovations in health care, education, public safety, energy, and public services that will improve our lives and communities, while providing public services in a more efficient manner.

In a report prepared for the U.S. Department of Commerce, economists found that communities with broadband experienced a higher rate of job growth and new business start-ups than communities without high-speed networks. Another study of the central Appalachian region found that firms in communities with broadband were

14 to 17 percent more productive than those in communities without high-speed Internet access. A Brookings Institution paper calculated that build-out of broadband infrastructure to all households would add $500 billion to gross domestic product and 1.2 million additional jobs. Another report warned that the failure to improve broadband performance could reduce U.S. productivity by 1 percentage point or more per year.[1]

RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. JOHN F. KERRY TO JONATHAN LINKOUS

Question 1. If this hearing is to act as a jumping off point for next Congress, and for the next Administration, can you each give a policy recommendation for how to go about deploying broadband to every American? What policy initiatives should be included in the President's national broadband Strategy? What can be accomplished at the FCC? And what initiatives should be taken by the Federal Government to increase understanding and information in order to improve demand on the part of the consumer?

Answer. Using Federal funds to pay for the deployment of large telecommunication pipes where there is no foreseeable need or where consumer demand and the private sector will already meet the need, would be imprudent. Similarly, deploying broadband over pathways already filled with dark fiber or paying for outdated telecommunications technology is equally foolish.

However, there are a growing number of health, educational, and public sector services requiring broadband access where such access might not otherwise be available. Also, there are certain geographic areas that may present economic barriers to broadband deployment. Finally, low income families may not be able to afford such access. In these cases, there is a justifiable need for public support to gain access to broadband. Historically, these are the same arguments that justified the establishment of Universal Service.

The easiest and most cost-effective approach to ensure broadband access to every American is to use the universal service mechanism. Thus, the existing definition of "Plain Old Telephone Service" that is offered through Universal Service policies should be revised to reflect faster speeds, both to and from the consumer. Such a change in public policy should originate from Congress and be implemented at the FCC.

Question 2. Experts and legislators from both side of the aisle see great promise in modernizing the health care system, particularly the life saving and cost saving benefits of electronic prescribing and electronic health records. To what extent do you see the lack of broadband access and penetration as limiting the full adoption and functionality of our progress in developing digital health care?

Answer. There are numerous barriers inhibiting the deployment of many forms of health technology. Technical standardization, clinical practice guidelines and reimbursement for remote health services are a few of the needs. Telemedicine, the provision of health services over distances, also needs affordable telecommunications services. Traditionally connecting large hospitals to outlying clinics, telemedicine is now being made available directly to the individual through the Internet and cell phones. Continuous, personal health monitoring and instant diagnosis and even treatment of an individual's health problems via telemedicine are around the corner. Such revolutionary applications are transforming how, why and when healthcare is delivered, improving care and vastly reducing costs.

Universal access to these health services will soon become critical in order to avoid yet one more set of haves and have-nots. In the near future, the lack of personal access to telecommunications will be tantamount to a lack of access to healthcare.

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[1] William Lehr, Carlos A. Osorio, Sharon E. Gillett, and Marvin Sirbu, "Measuring Broadband's Economic Impact," U.S. Department of Commerce, Economic Development Administration (Feb. 2006) (available at *http://www.eda.gov/ImageCache/EDAPublic/documents/pdfdocs2006/mitcmubbimpactreport_2epdf/v1/mitcmubbimpactreport.pdf*); Mark L. Burton and Michael J. Hicks, "The Residential and Commercial Benefits of Rural Broadband: Evidence from Central Appalachia," June 2005, Paper prepared for the West Virginia Development Office, Center for Business and Economic Research, Marshall University; R. Crandall and C. Jackson, "The $500 Billion Opportunity: The Potential Economic Benefit of Widespread Diffusion of Broadband Internet Access," Criterion Economics, 2001 (available at *http://www.ntia.doc.gov/ntiahome/broadband/comments/verizon/ExhibitA.pdf*); C. Ferguson, "The United States Broadband Problem: Analysis and Recommendations," Brookings Institution Working Paper, 2002 (available at *http://www.brookings.edu/views/papers/ferguson/working_paper_20020531.pdf*)

RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. JOHN F. KERRY TO MARA MAYOR, PH.D.

Question 1. If this hearing is to act as a jumping off point for next Congress, and for the next Administration, can you each give a policy recommendation for how to go about deploying broadband to every American? What policy initiatives should be included in the President's national broadband Strategy? What can be accomplished at the FCC? And what initiatives should be taken by the Federal Government to increase understanding and information in order to improve demand on the part of the consumer?

Answer. Older Americans have the potential to reap significant benefits from the widespread availability of affordable and high-quality broadband services. Broadband services can create new opportunities for older Americans to maintain their independence and security, to receive improved medical supervision and care, and to maintain their productivity in the work force. Broadband provides new avenues for socialization and contact with the outside world for individuals who may experience decreased mobility. Broadband also has the potential to offer expanded support to family and friends who act as unpaid caregivers for older Americans.

More generally, broadband can enable expanded innovation and provide new opportunities for economic growth, both in economic sectors associated with serving older persons, such as health and social care, and in the overall economy. A growing body of research links broadband deployment to increases in employment and economic growth.

Congress should make ubiquitous, affordable, and truly high-speed broadband a national priority. It should create an aggressive national broadband deployment strategy that establishes the U.S. as the world leader in providing all of its citizens with access to the fastest and most affordable broadband services. Specific targets in terms of broadband penetration, coverage, and usage should be established to spur progress toward meeting the statutory objectives of "access to broadband telecommunications capability that enables users to originate and receive high-quality voice, data, graphics, and video telecommunications using any technology." Establishing the following milestones would help reach that goal:

- the provision of affordable broadband with symmetrical speeds of at least 10 Mbps that is available to 100 percent of U.S. households by the end of 2010;
- the provision of affordable broadband with symmetrical speeds of at least 100 Mbps available to 100 percent of U.S. households by the end of 2015.

In addition, a new national broadband policy should encourage both the demand and supply sides of the market for this technology and incorporate the following key principles:

- transparency and accountability—Indicators of market performance are essential for achieving strategic goals.
- promotion of open and standardized broadband platforms—open and standardized broadband platforms will result in the greatest opportunities for innovation and the fullest benefits of competition.
- greater promotion of broadband adoption especially among the older and underserved populations—see response to question #2 below.

Question 1a. What can be accomplished at the FCC?

Answer. Contrary to the FCC's recent Report to Congress that indicates that all Americans have access to affordable advanced telecommunications services, broadband deployment in the United States has substantial deficiencies. For example, evidence shows that there is a significant difference between rural and urban broadband Internet usage in the United States. There are substantial differences in broadband adoption based on household income. Age is also a factor limiting broadband adoption, with a scant 15 percent of households headed by individuals over 65 having a broadband connection.

To implement meaningful reform, the following steps are appropriate by the FCC:

- The FCC must identify the supported companies that have upgraded their networks to provide broadband.
- The FCC must audit these firms to determine the extent and quality of broadband coverage, this audit can contribute to generating accurate maps that identify the characteristics of broadband deployment.
- The FCC must establish the cost basis for the joint provision of voice and broadband services.

- The FCC must acknowledge revenue streams arising from both voice and broadband services, and,
- The FCC must award support to these companies based on data obtained from the review of costs and revenues.

To satisfy the statutory objectives, mapping must identify the current status of all broadband deployments. The FCC must establish a broadband speed benchmark that encourages the deployment of high quality broadband. For any new broadband facilities supported by any broadband expansion fund, priority be awarded to deployments that provide symmetrical data speeds of 10 Mbps or greater.

Question 1b. What initiatives should be taken by the Federal Government to increase understanding and information in order to improve demand on the part of the consumer?

Answer. Affordability is a key factor in improving demand on the part of the consumer. Given the inclusion of broadband services in the universal service offering, the FCC must establish an affordability standard. Affordability proceedings should be conducted with the assistance of the state commissions, as regional and local factors have a strong influence on the ability of households to afford broadband. In addition, policymakers should establish and sufficiently fund broadband assistance programs for low-income consumers to ensure that high-quality broadband is within the reach of all U.S. households.

Question 2. In your testimony, you mention the fact that only 19 percent of people over age 65 have broadband service in their home. How much of the problem is lack of education and understanding, and what can be done to help this demographic learn more about the benefits of broadband access?

Answer. Many older adults and many younger ones as well, could benefit by knowing more about the benefits of broadband access that are available today, and those that are on the horizon. In this regard, education and incentives that encourage broadband consumption should be implemented. The education efforts should be oriented toward "lifelong learning" to ensure that all members of society have sufficient knowledge to understand the benefits of information technologies, including broadband. The promotion of broadband consumption should leverage telework, telehealth, electronic commerce, electronic government, and distance-education activities as key focus areas. Special attention should be given to demonstrating the utility of applications in these areas to meeting the independent living assistance, employment, health, and education needs of older persons. Specific provisions to promote broadband consumption could include:

- programs that promote the refurbishment and distribution to low-income households of discarded but serviceable computers, to ensure the availability of computers in low income households;
- public service advertising;
- expanded adult community education programs targeting broadband and computer use; and
- a national initiative to ensure a minimum level of technology education in schools and other appropriate venues.

While limited awareness about the benefits of broadband access may help explain the relatively low adoption rate of home broadband service by older adults, it is not the only factor. Indeed, research suggests that older consumers' concerns about the costs of broadband services and capabilities and older consumers' perceptions of the relevance of these services and capabilities are more important factors in determining widespread adoption of broadband service.

For example, broadband can create opportunities to address the complexities of serving an aging population by facilitating access to health care services that are necessary to help older persons age successfully. In this regard, recent AARP research suggests strong support for telehealth. Three-fourths of older adults age 65+ say they are willing to have a cardiologist diagnose or monitor a heart condition by receiving information that is transmitted electronically to them from their primary care doctor's office or their home. Moreover, older adults identify safety, emotional peace of mind and comfort as benefits associated with personal health monitoring devices that are well supported by always-on broadband connections. Nevertheless, cost concerns rise to the top of the older adults' perceptions of these devices. Indeed, four out of five older adults express concern about the costs to install and maintain these devices. Similarly, other research finds that older adults perceive these broadband-enabled services to be too expensive for individual consumers unless they are extremely frail or the only other alternative to nursing care or living with an adult child.

RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. JOHN F. KERRY TO MARGARET M. CONROY

Question 1. If this hearing is to act as a jumping off point for the next Congress, and for the next Administration, can you each give a policy recommendation for how to go about deploying broadband to every American?

Answer. This is a time of great opportunity for the 111th Congress to provide leadership and vision to establish universal broadband services to all Americans. Like public libraries, public education and the Universal Service Fund (USF), universal broadband must be a long term and major priority so that legislation and funding will be passed to see genuine build out of this essential new infrastructure—especially in rural and remote communities.

Congressional leaders and pertinent Committees must make broadband deployment and sustainability a top priority for the coming congressional session. To make the proverbial "level playing field" in America a reality, broadband is essential. Congress should consider integrating a broadband component into all programs addressing economic and community development as well as library services, education and healthcare.

Additionally, Congress must put the reform of the Universal Service Fund (USF) as a first "must do" in its telecommunications agenda. USF is a critical tool for broadband build out and for sustaining broadband once it is constructed. As part of USF, the E-rate and rural telemedicine programs must be maintained and be configured to allow for more collaboration and aggregation of demand leading to broadband access especially in rural communities. Since it will be some time before there is "big broadband" to every home, we must make sure that unreached communities have access through their public libraries and rural healthcare providers for the interim and thereafter.

When the Senate considers a new nominee for chair of the Federal Communications Commission (FCC) priority must be on a candidate who is not just visionary, but is genuinely willing to set broadband as the top goal for 2009–2010—and be willing to state such in a confirmation hearing.

Congress also has a role in revitalizing the National Telecommunications and Information Administration (NTIA) and expanding the Rural Utilities Services program and related programs in the Department of Agriculture. Emphasis on existing or new initiatives should be on promoting aggregation of demand and the flexibility to develop partnerships, especially in rural and remote areas.

Meanwhile, the Obama Administration must make broadband deployment one of the highest priorities to promote economic development, education and community development. The Administration should develop a clear vision statement to promote broadband policies and work closely with Congress to actualize this vision.

We believe there is still a need for a strong public education program conducted by both leaders in the Executive Branch and Congress and through trusted intermediaries such as public libraries about why broadband is so essential—especially in communities that do not have broadband and have not experienced what it can do.

Question 2. What policy initiatives should be included in the President's national broadband Strategy?

Answer. We encourage the President to appoint strong leaders and effective administrators at the FCC and the NTIA to promote and coordinate the Administration's broadband efforts. A public education program should be established for both national leaders—but also for local education programs to inform communities about the need for broadband and the many essential services and opportunities for economic development, education and telemedicine. If there is a "chief technology officer" (CTO) the role should be *as much about public education and promoting applications* as it is on ending up on the same old corporate disputes between different carriers and technologies.

Question 3. What can be accomplished at the FCC?

Answer. The FCC must serve its role in the reform of USF and promoting broadband construction. Its policies should be technology-neutral and provide options for different technologies to be used in different types of communities with different geographies and economics. This means a more flexible USF especially in rural areas. By all means, the FCC must assure that the E-rate and rural telemedicine programs are stabilized and functioning effectively.

Question 4. And what initiatives should be taken by the Federal Government to increase understanding and information in order to improve demand on the part of the consumer?

Answer. There should be a greater emphasis on public education to promote WHY our Nation needs broadband. At the end of the day, it is the applications that broadband allows—from commercial and retail enterprises to e-government services to distance learning and remote telemedicine services and much more. Policies that impact the use of the technology should not limit the potential for creative new uses of broadband. The library community stands firmly in support of network neutrality as one policy reform needed to assure an open Internet.

November 18, 2008

Hon. CLAIRE MCCASKILL,
Hart Senate Office Building,
Washington, DC.

Dear Senator McCaskill,

I am so appreciative of the opportunity to address the Senate Commerce Committee on September 16 to share stories of how Missouri's libraries (and indeed libraries across the nation) are dependent on robust broadband Internet access to meet the needs of citizens.

You asked about the demand of higher education on Internet usage, and I am attaching a chart showing actual and projected usage of bandwidth from MOREnet for higher education circuits. MOREnet serves the majority of public colleges and universities in the state.

You also asked about the State of Missouri's investment in public Internet access. Here are the funds from the current state budget dedicated to MOREnet:

For education: $12,829,612

For libraries: $3,109,000

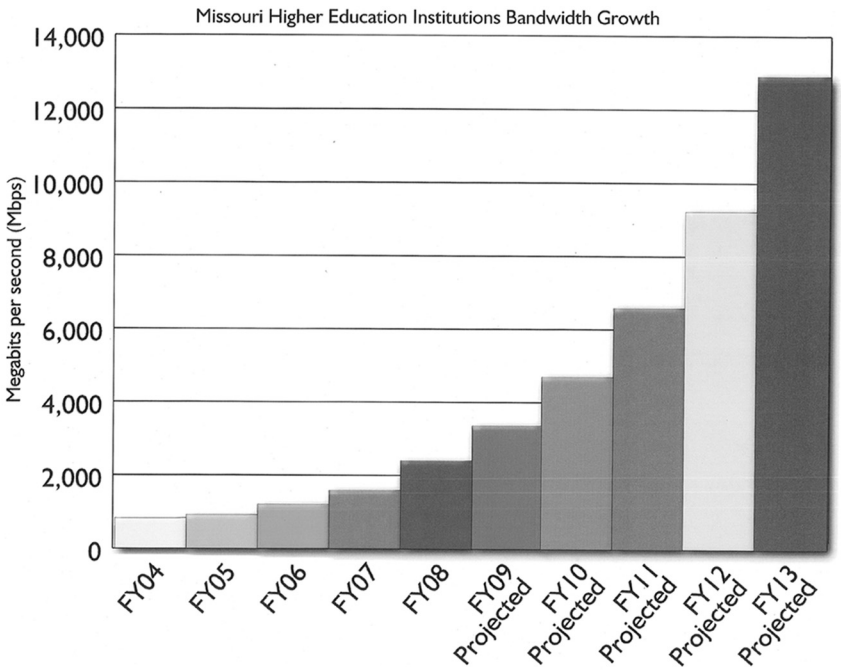
State agencies currently expend a little under $1 million per year for broadband and Internet services. This is the amount paid to communication carriers (ca. $800,000) and for MOREnet membership fees, and does not include equipment or personnel costs to handle connectivity and security.

Finally, the amount MOREnet spends on e-rate eligible services returns around $6,000,000 annually to the state in e-rate funds ($5,909,000 in FY08).

Thank you again for the opportunity to address the Senate Commerce Committee and to provide you with information on how telecommunications investments support libraries and education in Missouri.

Sincerely,

MARGARET M. CONROY,
Missouri State Librarian.


Missouri Higher Education Institutions Bandwidth Growth
Megabits per second (Mbps)
14,000
12,000
10,000
8,000
6,000
4,000
2,000
0
FY04
FY05
FY06
FY07
FY08
FY09 Projected
FY10 Projected
FY11 Projected
FY12 Projected
FY13 Projected

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