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**S. 414, DIGITAL DIVIDE AND MINORITY SERVING
INSTITUTIONS**

HEARING

BEFORE THE
SUBCOMMITTEE ON SCIENCE, TECHNOLOGY,
AND SPACE
OF THE
COMMITTEE ON COMMERCE,
SCIENCE, AND TRANSPORTATION

UNITED STATES SENATE
ONE HUNDRED SEVENTH CONGRESS

SECOND SESSION

FEBRUARY 27, 2002

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ONE HUNDRED SEVENTH CONGRESS

SECOND SESSION

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**S. 414, DIGITAL DIVIDE AND MINORITY
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WEDNESDAY, FEBRUARY 27, 2002

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

The Subcommittee met, pursuant to notice, at 2 p.m. in room SR-253, Russell Senate Office Building, Hon. Ron Wyden, Chairman of the Subcommittee, presiding.

Senator WYDEN. The Subcommittee on Science, Technology, and Space will come to order. I will have an opening statement in just a moment. But first, I want to recognize our friend from North Dakota for any comments that he would like to make.

**STATEMENT OF HON. BYRON L. DORGAN,
U.S. SENATOR FROM NORTH DAKOTA**

Senator DORGAN. Mr. Chairman, thank you very much. I am pleased to be here today. I just had a chance to see my former colleague Bill Gray. When I served in the House of Representatives he was a member of the leadership in the House. It's nice to see former Congressman Gray with us today.

I am not able to stay because I have another hearing, but I wanted to tell you that Dr. Monette is with us today. I call him Carty. He has been a friend of mine for many years. He is the President of Turtle Mountain Community College. He is here with David Gipp, who is President of United Tribes Technical College, a wonderful institution in Bismarck, North Dakota serving tribes. They are going to be talking about Native Americans and Technology, a program that I am very interested in helping develop.

I think Senator Cleland's bill, the NTIA Digital Network Technology Program Act is a good step in providing tribal colleges and other minority-serving colleges with some resources, and I am really pleased by the work that Senator Cleland has done.

But I did especially—just because Carty is with us today—want to stop by and say that I have valued my friendship with him for many years. He is President of a wonderful institution on the Turtle Mountain Indian Reservation, and I know that you will pay great attention to his testimony and will continue to work with him on these important issues.

So, Mr. Chairman, thank you for recognizing me before I have to leave.

**STATEMENT OF HON. RON WYDEN,
U.S. SENATOR FROM OREGON**

Senator WYDEN. Thank you, my colleague. And let me begin this hearing of the Subcommittee on Science, Technology, and Space by thanking our friend and colleague, Senator Cleland, for all of his leadership. He has really been the champion of this Subcommittee on these vital issues.

I have got to be two places at once; I am going to try and stay for a little bit, but we are happy to have Senator Cleland here to chair this important hearing. This hearing is being held because of Senator Cleland's effort and at his request. We want to thank him for all of his efforts and his signing that bill, which we strongly support.

The debate about the digital divide is ultimately a question of whether or not this country is going to tolerate an information aristocracy. Certainly, as a result of today's technologies, it is possible for the affluent to have technologies that no one could have dreamed about even 8, 10, 12 years ago. The question is are all Americans going to have access to those technologies, or, in fact, are we going to leave millions of Americans, people in rural areas, minorities, people in the inner city, behind, and deny them the opportunity to enjoy the fruits of the technological revolution?

It is critically important that all Americans have access to these technologies and that we work on it, in the tradition that I especially have felt strongly about as chair of this Subcommittee, and that is to work in a bipartisan way. There is absolutely nothing about these issues, in my view, that ought to be partisan.

He is not here at this time, but Senator Allen, the Ranking Republican on this Subcommittee, has met me more than halfway in terms of working on these issues. I am very appreciative of it. His State of Virginia, and mine of Oregon both have made substantial investments in technology and see these issues as critically important. We have tried to have something of a bipartisan bulwark in terms of working on these issues.

That is why I bring up this morning's article in *The Wall Street Journal*, because I hope it does not reflect some of the thinking of others on this issue. I am going to put into the record at this time the article in this morning's *Wall Street Journal* entitled: "White House Spurns Tech Programs Left Over From Clinton Presidency." It talks about the opposition by, it seems, a number of influential people in the Administration to initiatives to try to close the digital divide. If that is the case, I think it is very unfortunate.

[The information referred to follows:]

THE WALL STREET JOURNAL

February 27, 2002

White House Spurns Tech Programs
Left Over from Clinton Presidency
By Yochi J. Dreazen

WASHINGTON—Only those with "an unreal understanding" of U.S. capitalism would expect the poor, minorities and rural residents to immediately have the same access to the Internet as other Americans, the nation's top telecommunications regulator has said. Government efforts to bridge the divide, he added, veer toward "socialization."

The skepticism expressed last year by Michael Powell, the Bush appointee who is chairman of the Federal Communications Commission, plainly seems to be shared

by the rest of the administration. Breaking with Clinton administration policy, the Bush team has set about quietly dismantling many programs devoted to ending the so-called digital divide. The latest casualty: the Technology Opportunities Program—or TOP—one of Mr. Clinton's favorites.

Bush officials, including chief economic adviser Lawrence Lindsey, also oppose Democratic proposals for tax incentives for companies that bring broadband Internet access to poor and rural areas. And the administration may take aim again at the FCC's popular "e-rate" program, widely credited with helping to wire thousands of inner-city schools and libraries.

Democrats, in turn, are firing back. They blast the White House for trying to overhaul or drop the programs amid a recession that leaves the least-educated Americans most vulnerable. Critics note that half the new jobs for workers without college degrees require daily use of computers, often including use of the Internet, and the income gap between those who use computers on the job and those who don't continues to widen.

"You don't even hear the Bush people pay lip service to the digital divide," says Greg Simon, who was a longtime top adviser to Vice President Al Gore and a Clinton administration adviser on telecommunications issues. "Why are they so quick to get rid of these little programs that help the poor? It's not like the digital divide has suddenly gone away."

Maybe not suddenly, but it is going away, Bush officials maintain. Looking at the same data as their critics, administration officials see a digital divide closing—if slowly—where their foes see a growing chasm. Meanwhile, they reject any suggestion the administration is ignoring the gap. Officials say they simply are trying to streamline government efforts, to be more efficient and up-to-date, while encouraging the private sector to take more responsibility for spreading digital skills.

"We haven't declared victory on the digital divide, but there's been tremendous growth across the board, and we are clearly moving in the right direction," says Nancy Victory, who runs the Commerce Department's National Telecommunications and Information Agency, the government's technology-policy arm. "The changes we want to make don't show a lack of commitment—they show that we're trying to move ahead in different and more targeted ways."

Earlier this month, an NTIA report showed the growth in Internet usage among poor and minority Americans far exceeded that for wealthy, white or Asian Americans. Web use among blacks and Hispanics, for instance, grew by 33 percent and 30 percent, respectively, between August 2000 and September 2001, while the growth rate for whites and Asians was 20 percent. To the administration, this is evidence of a narrowing digital divide, undercutting the argument for more Federal help.

Some Democrats drew a different conclusion. While growth rates for Web use are indeed higher for those on the wrong side of the divide, those groups started from so far down that the gap is wider than ever. For instance, the report found that in 1997, 10 percent of Americans earning less than \$25,000 a year used the Web, compared with 45 percent of those earning more than \$75,000—a gap of 35 percentage points. By 2001, despite the progress in both groups, the gap was 50 percentage points.

"The same people who said during the 1990's that there was no digital divide are now saying there was one, but it's been cured," says Larry Irving, who ran the NTIA during the Clinton administration. "But how can we declare victory when 75 percent of our poorest people and 60 percent of our blacks and Hispanics have no Internet access of any kind?"

For the administration, Ms. Victory says the growth rates offer a better picture of the status of the digital divide. "They're the best indicator of future trends and where things are heading," she says.

The two sides are just as far apart on policies, a difference that dates to the Bush-Gore Presidential contest. Shortly after taking office, Bush officials said they would fulfill a campaign promise effectively eliminating the FCC's popular e-rate program, which Mr. Gore had promoted and which reimbursed schools and libraries for as much as 90 percent of the cost of Internet access. Instead, the administration proposed block grants for the states from the Education Department, combining funds that otherwise would have gone for the e-rate program with those for other education-technology programs.

The proposal alarmed many educators, who feared that some state governments would use the money for other purposes. Opponents, including several Republicans such as Maine Sen. Olympia Snowe, also worried about putting the program under the control of a cabinet department, where it would be subject to normal budget politics, instead of the independent FCC. The administration dropped the proposal in

2001, but now White House officials privately have told some Republican lawmakers they may revive it this year.

The administration's most controversial move is its proposal to eliminate the small TOP program of grants to state and local-government agencies and nonprofit groups. Last year, the Bush administration had proposed slashing its funding, once as much as \$45 million, to \$15 million.

The TOP program was designed to provide matching grant money for technology projects at schools, libraries, health agencies, police departments and nonprofits. The Maya Angelou Public Charter School, in the capital's poor inner city, used its money to buy laptops so students can learn e-mail and other computer skills, and in turn teach senior citizens in the area. Another project linked doctors at the University of Kansas Medical Center with nurses in nearby schools.

"TOP was at bottom a laboratory for good ideas about how to use computers and the Internet to benefit communities," Ms. Victory says. "But," she adds, "now it's time to build on some of those lessons."

Ms. Victory cites other proposals in the Bush budget for fiscal 2003—among them, technology grants of as much as \$1 billion for the Education Department, \$1 billion for law enforcement at the Justice Department, and \$100 million for rural telecommunications through the Agriculture Department. She concedes that most programs that have received TOP funds could be bypassed by the new block grants, since local and State officials would be largely free to use the money as they like.

For administration critics, the acknowledgment of TOP's success makes its proposed demise even more baffling. "If it's not broken and the need is still there," says Greg Rohde, a former Clinton telecom official, "why get rid of it?"

Senator WYDEN. I hope that we can bring back, starting in this Subcommittee, a bipartisan effort to deal with these questions. As certainly Senator Cleland knows, there is some new data on this issue, and I think it is possible to have a debate about the ramifications of this new data. Certainly, there are some favorable blips, so to speak, in terms of certain aspects of the data, but any way you cut it, there is still a long, long way to go in terms of this issue.

I will tell you that I certainly do not see closing the gap between technology haves and have-nots as some kind of step toward socialization. To me, this is not a matter of political philosophy. This is a matter of equal opportunity, a principle on which this country was founded. The fact of the matter is that these critical programs—these critical programs that Senator Cleland has championed—are a matter of preparation for today's free enterprise system, for people to participate in the modern workplace. It is a matter of empowering people to participate in today's free enterprise system for communities that might otherwise be left behind in those private markets.

So, this is a particularly important hearing. In my view, without the kind of initiatives that Senator Cleland and others are championing, we would see whole communities, rural communities, minority communities, inner cities, bypassed, in effect, turning those communities into what amounts to economic sacrifice zones. And, I think that is wholly unacceptable.

Today, we are going to focus on a particular aspect of the digital divide, the technology gap facing colleges and universities serving largely minority populations. My view is these institutions play an extremely important role in the educational framework of this country, and they face unique challenges. I hope to stay for a bit of this morning's testimony before we turn it over to Senator Cleland, but he continues to be the spark behind the Subcommittee's effort to address these issues and brings a remarkable mix of determination and devotion to the public interest and just a whole lot of what I call "Cleland common sense."

So, we are going to recognize him for his opening statement, then we will have the witnesses. I'm going to stay as long as I can and then turn it over to Senator Cleland.

Senator Cleland, you can proceed with your opening statement any way you choose.

**STATEMENT OF HON. MAX CLELAND,
U.S. SENATOR FROM GEORGIA**

Senator CLELAND. Well, thank you very much, Mr. Chairman. And may I just say Harry Truman once described leadership as "getting people to do what they ought to do anyway," which means that most of us need good leaders. And you are one of the best leaders in this great body, and thank you for leading this effort.

Thank you for realizing that there is such a thing called a digital divide, or that we could leave a lot of people in America behind, especially a whole generation of youngsters, if they do not have the proper technology, proper equipment, if they are not wired to their future. And that is what this is all about today, Mr. Chairman. Thank you for your leadership and for your support. I know your time is short, but thank you for staying as long as you can.

Dr. Benjamin Mays, the celebrated African American educator and valued presidential adviser, who hailed from Atlanta, Georgia, once said, "Every man is born into the world to do something unique and something distinctive. And if he or she does not do it, it will never be done."

Increasingly, the ability to do anything in America is based on access to information and technology. For more Americans, more and more Americans, that access is increasingly limited. Mr. Chairman, I noticed that the *Wall Street Journal* article you referred to indicates that new data shows that although web usage, or access to the World Wide Web and usage has grown fastest among poor and minority citizens, the gaps actually have widened. So we have our challenge before us.

And additionally, the latest census reveals that more than three-fourths of white and non-Hispanic households have access to a computer at home. By comparison, less than one-half of black households, some 44 percent, and just over a third of the Hispanic households, 38 percent, have computers in their homes. These figures offer compelling evidence that a significant technology gap, the so-called "digital divide," still exists for many Americans, which left unchecked, can prevent them from accomplishing that unique and distinctive thing which Dr. Mays says each man is born into this world to do.

Just this month, the Commerce Department released its latest report on America's access to the Internet and World Wide Web. That study, "A Nation Online, How Americans Are Expanding Their Use of the Internet," found that K through 12 schools play a major role in reducing the digital divide. To repeat, "A Nation Online" found that solely because of the availability of school computers, schools significantly help to equalize the disparity that would otherwise exist in computer and Internet use among children, ages 10 to 17, who are of different racial, ethnic and income backgrounds. The task before us today, the reason for today's hearing, is to insure that the opportunity to close the economic and ra-

cial divide in the access of Americans to computers and the Internet continues in our institutions of higher education.

President Bush has continually and movingly stated that it is his Administration's mission to leave no child behind. For many of American's neediest children, those who because of income and race are caught on the wrong side of the digital divide, our minority-serving institutions are the last best chance they have of gaining the skills and tools they need to become competitive in today's high-tech, information-based workforce.

It is all the more critical then that America's minority-serving institutions, many with limited resources, be at the cutting edge of our information technology.

Toward this end, I am joined by 12 of my Senate colleagues in sponsoring S. 414, the NTIA Digital Network Technology Program Act. This legislation would create a new grant program within the Department of Commerce—under the Department of Commerce, not Education, but under the Department of Commerce, which is the center of technological expertise and innovation in the Federal Government.

Our bill would provide up to \$250 million to help historically black colleges and universities, Hispanic-serving institutions, and tribal colleges and universities bridge the digital divide. Funds provided under this legislation could be used for such activities as campus wiring, equipment upgrade, technology training, and hardware and software acquisition. A minority-serving institution, for example, could use funds provided under S. 414 to offer its students universal access to campus networks, or recipients might choose to use the grant money to dramatically increase their connectivity speed rates.

This hearing has been called today to publicly pose some crucial questions. What are the technology needs of our HBCUs, tribal colleges, and Hispanic-serving institutions? What are the specific barriers to MSIs in accessing state-of-the-art technology? How will technology advances at MSIs benefit our communities? What can Congress and the Nation do to help these institutions become fully competitive with other institutions of higher learning in the information age?

These are some of the questions that will be asked at today's hearing and I am looking forward to hearing our panelists' answers and recommendations. In the ever-expanding and always exciting world of the information highway, it should be our mandate to work to insure that no one in this country is left behind, least of all our leaders of tomorrow.

Now, Mr. Chairman, I would like to, if there's no objection, call the first panelist. Although I see Senator Allen is coming up.

Senator WYDEN. With your indulgence just for a moment, Mr. Cleland, Senator Allen has joined us. And as he makes his opening statement, I also want to let him know, because he was not here in the hearing room while I made mine, that while I have some concerns about this *Wall Street Journal* editorial, I want to make it clear, as we have on a number of occasions, that we are going to be working in this Subcommittee on a bipartisan basis to address these issues. That is what we did with the Internet tax moratorium renewal; that is what we are doing in terms of bio-terrorism

and mobilizing the scientific community to deal with the terrorist threat. That is what we are going to do on the digital divide issue as well, a lot of approaches that I think can bring people together, bring together many who have been disenfranchised in terms of communications and get support across the political spectrum.

I want my colleague to know that we are going to be working together, and I hope we can provide an alternative to some of those who try to hold people apart on this issue. I am going to recognize you for your statement.

[The prepared statement of Senator Cleland follows:]

PREPARED STATEMENT OF HON. MAX CLELAND, U.S. SENATOR FROM GEORGIA

Mr. Chairman, I want to thank you for holding this important hearing. Dr. Benjamin Mays, the celebrated African-American educator and valued presidential advisor, who just happened to hail from Atlanta, Georgia once said, "Every man is born into the world to do something unique and something distinctive, and if he or she does not do it, it will never be done." Increasingly the ability to do anything in America is based on access to information and technology. For many Americans, that access is limited. The latest Census revealed that more than three-fourths of white and non-Hispanic households have access to a computer at home. By comparison, less than half of black households, 44 percent, and just over a third of Hispanic households, 38 percent, have computers in their home. These figures offer compelling evidence that a significant technology gap, the so-called digital divide, still exists for many Americans which, left unchecked, can prevent them from accomplishing that unique and distinctive thing which Dr. Mays says each man is born into this world to do.

Now just this month the Commerce Department released its latest report on Americans' access to the Internet and World Wide Web. That study, *A Nation Online: How Americans Are Expanding Their Use of the Internet*, reported an amazing finding that should give us all reason to hope. That report found that K-12 schools play a major role in reducing the digital divide. To repeat: *A Nation Online* found that solely because of the availability of school computers, schools significantly help to equalize the disparity that would otherwise exist in computer and Internet use among children, ages 10 to 17, who are of different racial, ethnic, and income backgrounds. The task before us—and the reason for today's hearing—is to ensure that the opportunity to close the economic and racial divide in the access of Americans to computers and the Internet continues in our institutions of higher education.

President Bush has continually and movingly stated that it is his Administration's mission to leave no child behind. For many of America's neediest children—those who because of income and race are caught on the wrong side of the digital divide—our Minority-Serving Institutions are the last, best chance they have of gaining the skills and tools they need to become competitive in today's high-tech, information-based workforce. It is all the more critical, then, that America's Minority-Serving Institutions, many with limited resources, be at the cutting edge of our information technology.

Toward this end, I am joined by 12 of my Senate colleagues in sponsoring S. 414, the NTIA Digital Network Technology Program Act. This legislation would create a new grant program within the Department of Commerce, the center of technological expertise and innovation in the Federal Government. Our bill would provide up to \$250 million to help Historically Black Colleges and Universities, Hispanic-Serving Institutions, and Tribal Colleges and Universities bridge the digital divide. Funds provided under this legislation could be used for such activities as campus wiring, equipment upgrade, technology training, and hardware and software acquisition. A Minority-Serving Institution, for example, could use funds provided under S. 414 to offer its students universal access to campus networks, or recipients might choose to use their grant money to dramatically increase their connectivity speed rates.

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exciting world of the Information Highway, it should be our mandate to work to ensure that no one in this country is left behind—least of all our leaders of tomorrow.

**STATEMENT OF HON. GEORGE ALLEN,
U.S. SENATOR FROM VIRGINIA**

Senator ALLEN. Thank you, Mr. Chairman. I thank you for your introductory remarks and I agree with you completely.

The issue of access to opportunity is not an issue that should be a partisan issue. Every single human being in this country, regardless of their race, ethnic origin, their religious belief or gender, ought to have an equal opportunity to succeed in life. There are many things that do matter in whether somebody is going to succeed or not. Obviously, having good policies at the Federal and State and local level as far as taxes and regulations and permitting and infrastructure matter, but clearly the future will be determined more by—much, if not more—certainly more in the future than in the past, knowledge and education and access to the tools of opportunity.

The Internet clearly is an individually empowering tool, and we should not have people, to the extent that we can help it, who want to be productive and want to have access to information and education, be harmed or hurt in their ability to achieve it because of what we call the “Digital Divide.”

I would like to thank you, Mr. Chairman, for having this hearing. The sentiments expressed by you and by Senator Cleland are, I think, sentiments of every—I would hope, everyone in the Senate regardless of party. We may have differences once in the while on what is the best way to get to the goal, but our goals need to be parallel.

I especially want to recognize and say I appreciate having Dr. Marie McDemmond, President of Norfolk State University, here with us today and look forward to hearing her. And hopefully others can learn and we can learn how you are working at Norfolk State University in addressing this important concern, and maybe others can as well learn from you.

The issue of the digital divide is a question of access to the telecommunications technologies, and the difference between those who have access to it and those who do not. I share the concerns about the disparity between, to the extent we look at people based on ethnicity or race. President Clinton’s Information Technology Advisory Committee in 2000 pointed out that African Americans, Hispanics and Native Americans, or Indians, do not comprise a significant portion of the information based network.

Now just recently a report was issued last month by the Secretary of Commerce. And it is logical that Commerce would be on it. I think Secretary Evans is actually someone who recognizes the importance of technology for our economy. I was with him as he revealed that report earlier this month. And it is called “The Nation Online, How Americans Are Expanding Their Use of the Internet.”

But according to this report, more than half the households in this country, about 54 million homes—or 50 percent of all the households, had Internet connections. This is a significant increase. And it shows some progress being made here. It is a significant increase over the 18.6 percent of households that had Internet access

in 1998. So in other words, it has gone from about 19 percent to 50 percent in the last 4 years.

The report also found that 143 million Americans, which is about 54 percent of the population, use the Internet. The report said that in, quote, "every income bracket, at every level of education, in every age group, for people of every race and among people of Hispanic origin, among both men and women, many more people use computers and the Internet now than in the recent past."

The report also had findings on minority computer use, which also showed signs of improvement. Between August of 2000 and September of 2001, in other words, 1 year, 13 months, Internet use among African Americans and Hispanics increased at an annual growth of 33 percent and 30 percent respectively. White and Asian American and Pacific Islanders experienced annual rate increases of 20 percent.

Now, yes, so that is one thing. Let us tell the whole story though, and still you have to put it in a context. And I think that Secretary Evans recognized it, that whites and Asian Americans continued to have higher rates of computer and Internet use than African Americans and Hispanics, that in September of 2001, 71 percent of Asian American and Pacific Islanders and 70 percent of whites were computer users, while about 56 percent of African Americans and about 49 percent of Hispanics were computer users.

The point, though, on all of this, and I would like to look at people not by their race or their religion; I would like to do it as Martin Luther King calls for in his "I Have a Dream" speech, that people be looked upon not by their race but by the "content of their character." The big distinguishing feature is not so much race. It is a question of income. And the report shows that the family income remains the key indicator of whether a person uses the Internet. Households with less than \$15,000 in annual income have a 25 percent rate of Internet use, while families with incomes over \$75,000 a year have almost 80 percent Internet use rates, and almost 90 percent of households with an income of \$75,000 use computers while less than 40 percent of households with less than \$15,000 in annual income use computers.

Some of this is just intuitive and logical. When you think of what its costs to buy a computer, what it is going to cost to get Internet access on top of whatever other bills one has, the lower the income, the less discretionary income one has to buy computers, peripherals, Internet access, screens, modems and so forth. So, that is one reason I think it is important for us to look at this as a digital divide which, while people do not like to see ethnic or racial disparities, we recognize what we need to do is make sure that—those especially in our schools and in education and in communities have access to the Internet and computers, because the reality is that it is such an empowering tool for the future. You look at the reality that a youngster, regardless of what their income is in their homes, if they have a computer at home, they are going to do better in school. I am focusing here on K through 12th grade before they even get to colleges and universities. If they have a computer at home they are going to do better. They are going to have access to information. To the extent the children can do reports on a computer as a word processor or researching a subject in doing their

homework, it would be nice to do their homework on a computer at home rather than a school library. While it is important to have computers in our schools, and there are some great programs that AOL is doing with Powerup and Intel is doing with their computer clubhouses, all of those are very good, but the goal should really—in my view—be to make sure our youngsters have greater access to computers at home.

One of the issues I ran on and I am still working on and am glad to see the President put in part of his tax measure, is to give a income tax credit, refundable tax credit in this bill. I introduced a bill on this last year in March. Senator Boxer is a co-sponsor of it. It is a bipartisan effort, and that is to provide parents of children in grades kindergarden through twelfth a \$1,000 per-child tax credit for the purchase of computers, educational software, peripherals, tutoring or Internet access. Now the President's idea goes a little further and limits it to kids who are in failing schools; I would like to see it for all kids. But I think that would very much help ease the digital divide, and would like to hear any comments on that.

We also have a concern on the digital divide and the effects of it on historically black colleges. I am not sure how much somebody has gone through some of these statistics, but access to basic Internet services at historically black colleges and universities along the T-1 lines are about 88 percent, but they do not have access at the same rate and it is about half that rate to the ATM (Asynchronous Transfer Mode) technologies for the faster, better streaming, that other universities have. So there is a digital divide just at our universities and colleges. As Governor, I tried to address a lot of this with "Network Virginia" and tried to make sure all of our colleges and universities and community colleges and State agencies were connected on the broadband. And there are some good consortiums going in Virginia with the community colleges and other universities to provide distance learning or online learning.

But again, there is much more to be done. CISCO, obviously we will hear about CISCO and what CISCO is doing at Norfolk State; that is an example that we ought to encourage. And the reality, folks, though, is that if youngsters are not getting a good quality education, they are less likely to avail themselves of the best-paying jobs, the good-paying jobs in the future, which are in the technology sector. They need a good solid, basic education in primary and secondary schools as a foundation for higher education, higher learning and colleges.

And the reality is, what we are going to hear today, and I very much look forward to hearing from our witnesses, is how we are able to adapt to this current situation and what recommendations you all have for how we can resolve this challenge. Because the reality is, this is a challenge we have to face. And if we do it properly, what we are in effect providing is more students in our United States—all students, more students—with a greater opportunity, not just for a job, but greater opportunities in life. And I look forward to working with you all to achieve that very worthwhile and necessary goal.

Senator WYDEN. I thank my colleague. Let us get right to our witnesses, because I think your comments at the end really summed it up. Much more needs to be done, and we are going to

work together to get about the task. We will have a panel now of Dr. Antonio Flores; the Hon. William Gray; Dr. Frederick Humphries; and Dr. Gerald "Carty" Monette. And if all of you will come forward.

As you are coming forward, gentlemen, I am on the Intelligence Committee, and I am going to be ducking out in just a couple of moments and turning it over to the very able leadership of Senator Cleland. As you all get seated, and get comfortable, I do want to begin with our friend Bill Gray. Bill Gray and I were neighbors for a number of years there in the Rayburn Building, and we are so pleased that you continue to serve this country with such distinction and such ability. It is great to see my old office mate here.

Mr. Gray, with your indulgence, we will let you begin. I understand you have a tight time schedule. Do you have to leave after you have made your presentation?

Mr. GRAY. No, I will stay.

Senator WYDEN. All right. Let us begin with you. And, apologies to other witnesses, because I am going to have to duck out here in a moment. We will make your prepared remarks a part of the record, and we will still call you Chairman Gray.

**STATEMENT OF HON. WILLIAM H. GRAY III, PRESIDENT AND
CEO, UNITED NEGRO COLLEGE FUND**

Mr. GRAY. Thank you, Mr. Chairman, and to the Members of this distinguished Subcommittee. I am Bill Gray, President of the United Negro College Fund. And I am pleased to join my colleagues to present UNCF's views and recommendations on S. 414. I want to thank Chairman Hollings for his strong support, Chairman Wyden for calling this hearing, Senator George Allen, who represents the State where UNCF's national headquarters is located, and finally, I want to applaud the leadership that Senators Cleland and Stevens have given to this important issue, especially Senator Cleland for his willingness to listen to the concerns of UNCF's members and to this vital need.

I have submitted my testimony for the record. I will try to just give a quick summary.

While we have not yet conquered the chasm that separates the college aspirations and opportunities for all Americans, minority youth from their majority counterparts, we are faced with a simultaneous and equally daunting challenge. The digital divide threatens to deny minority students, our professors, our institutions, the competitiveness they need to overcome the remaining vestiges imposed by race and economic segregation in America.

America's colleges and universities represent the last bulwark of the Nation's defense against technological illiteracy. We can ill afford to produce graduates who enter the workforce without mastering the basic computer skills and understanding how technology applies to their professions.

S. 414 is important at the outset because UNCF and other HBCUs enroll large numbers of poor students. Fifty percent of all of our students come from families with less than \$35,000 gross adjusted income, and over 90 percent of our students receive some form of Federal assistance. It is clear that these demographic factors make it virtually certain that many UNCF students will have

their first exposure to computers and technology and the Internet when they arrive on the college campus.

Second, for many institutions that enroll large numbers of minorities, their inability to finance the acquisition of needed technology infrastructure creates another digital divide. Private black colleges have very small endowments and cannot fall back on sizable numbers of wealthy alumni, compared with well-financed institutions with greater access to funding necessary to purchase technology.

HBCUs, then, face a dual digital challenge. They enroll large numbers of students who are admitted to college with limited exposure to technology, and second, the institutions that admit them have fewer resources in overcoming these digital deficits.

Even with the UNCF Technology Enhancement Capital Campaign, which we use to close the digital divide on our campuses, and despite the progress that we have made in the last 2 or 3 years, there is still much to be done. And based on the UNCF experience, what our institutions need more than anything else is funding, to purchase the instrumentation and to prepare students and institutional personnel for their use.

S. 414 will help provide these resources. S. 414 encourages partnerships with the private sector while avoiding creating a barrier to institutional progress. Therefore we want to applaud its concept, S. 414.

Finally, Mr. Chairman and Members of the Subcommittee, I would like to close by simply saying that given the dynamics of technology on finance and global markets in the 21st century, given the demographic changes taking place in this country in this century, this issue is not about social engineering. It is not even about equality. It is about something greater. It is about America's future: whether we will prosper, whether we will be secure, and whether we will retain our world leadership. That is what this issue is ultimately about.

I applaud the Subcommittee for the hearing. I applaud the sponsors of this legislation. I join with my colleagues in urging its passage, and also strong support.

[The prepared statement of Hon. Gray follows:]

PREPARED STATEMENT OF HON. WILLIAM H. GRAY III, PRESIDENT AND CEO,
UNITED NEGRO COLLEGE FUND

Mr. Chairman, and Members of the Subcommittee, I am William H. Gray, President and Chief Executive Officer of the United Negro College Fund (UNCF). UNCF is America's oldest and most successful African American higher education assistance organization.

I am pleased to join my colleagues—representing the other minority higher education associations—to present UNCF's views and recommendations for S. 414, "the NTIA Digital Network Program Act." I want to thank Chairman Hollings for allowing this hearing to take place, and for his strong support of S. 414. Chairman Hollings is very familiar with the needs and challenges faced by South Carolina's eight HBCUs, four of which are UNCF member institutions.

Let me also commend Chairman Wyden for calling this hearing so that we could have the chance to address one of the most critical issues affecting the education of minority students in America. I want to also thank our home Senator, Senator George Allen, who as Governor helped move Virginia into the high tech era, and who represents the State where UNCF's national headquarters is located.

Finally, I want to applaud the leadership that Senators Cleland and Stevens have given to this important issue. We at UNCF believe that providing public and private sector support for the acquisition of technology infrastructure, faculty development,

training and the integration of technology into the curriculum are among the most important challenges facing private HBCUs. We are especially indebted to Senator Cleland for his willingness to listen to the concerns of UNCF's member institutions, including those in the Atlanta University Center (AUC).

While we have not yet conquered the chasm that separates the college aspirations and opportunities for all of America's minority youth from their majority counterparts—we are faced with a simultaneous and equally daunting challenge. The 'digital divide' threatens to deny minority students, our professors, and our institutions the competitive skills they need to overcome the remaining vestiges imposed by race and economic segregation in America.

The Department of Commerce's July 1999 report "Falling Through the Net—A Report on the Telecommunications and Information Technology Gap in America" first highlighted the economic and racial divide in the access of Americans to telephones, computers and the Internet. As then Secretary of Commerce Daley pointed out "(E)nsuring access to the fundamental tools of the digital economy is one of the most significant investments our Nation can make." As important as these tools are at home and in our elementary and secondary schools, America's colleges and universities represent the last bulwark of the nation's defense against technological illiteracy. We can ill-afford to produce college graduates who enter the workforce without mastering basic computer skills and understanding how information technology applies to their work or profession.

Let me describe the two areas that I hope the Members of this Committee, and the U.S. Senate as a whole, will consider as they deliberate this legislation.

THE NEED FOR ENACTMENT OF S. 414

First, UNCF member institutions and other HBCUs enroll large numbers of poor students, whose parents are unable to help pay college costs. In fact, 50 percent of all UNCF students come from families with incomes less than \$35,000. Almost ninety percent of all UNCF students receive some form of Federal financial assistance, and sixty percent of UNCF students are first-generation college students. It is clear, then, that the confluence of these demographic factors make virtually certain that many UNCF students will have their first exposure to computers and to the Internet when they arrive on the college campus.

Second, for many institutions that enroll large numbers of minorities, making up the digital deficits at home and at school constitutes a real financial challenge. The inability of institutions to finance the acquisition of needed technology infrastructure creates another digital divide. Compared to other colleges, private black colleges have very small endowments and cannot fall back on sizable numbers of wealthy alumni. The average endowment of UNCF schools for the 1998–1999 academic year was \$22.229 million. Larger, well-financed institutions have greater access to the funding necessary to purchase technology, than do smaller, private colleges with fewer resources.

HBCUs, then, face a dual digital challenge—they enroll a large number of students who are admitted to college with the least pre-enrollment exposure and knowledge of technology and the Internet, and the institutions that admit them face certain financial challenges in overcoming these digital deficits.

UNCF schools illustrate the challenges we face as a nation. In August 2000, UNCF's testimony to the Web-based Commission, which I submit for the record, called attention to the plight of our students and member colleges:

- Only 15 percent of the 55,000 students attending UNCF member colleges and universities own computers;
- College students nationally were more than twice as likely to have access to a college-owned computer than their private, HBCU counterparts—one computer for every 2.6 students in higher education institutions nationally compared to one for every 6 students at UNCF colleges and universities;
- Seventy-one percent of faculty nationwide owned computers as compared to less than one-half of UNCF faculty;
- The number of network servers at UNCF colleges per 1,000 students is approximately one-half that of all colleges and universities nationally;
- Seventy-five percent of these servers, hubs, routers, and printers were obsolete or nearly obsolete and in need of replacement; and
- The rural and relatively isolated areas, in which many of these institutions are located, place an additional Internet access burden on those institutions.

Let me describe what UNCF has done to help meet this challenge.

UNCF IS ADDRESSING THE DIGITAL CHALLENGE

In January 2000, UNCF announced a partnership with Microsoft, IBM, AT&T and other major corporations and launched an \$80 million Technology Enhancement Capital Campaign (TECC). The campaign was designed to strengthen the technological capacity of each of the 39 member colleges and universities in three significant ways.

First, TECC strengthened the technology capacity through modernizing each institution's technology platform and gave every student and faculty member access to computers. As a result of this campaign, all UNCF colleges and universities meet certain minimum technology standards, including increased network capacity and uniform systems that enable electronic learning among institutions. Technical support was given so that all wiring, equipment installation, and data migration and configuration of hardware—including system testing—has been properly accomplished. This created equity in opportunity by making the same technology available to students attending UNCF member colleges and universities as is now available to students at majority institutions.

Second, on-campus training is being provided to a core group of campus officials who will then train others in the operation of all equipment. TECC also includes a faculty development component to assist faculty in integrating information technology into the curriculum and to assist faculty members in strengthening their research and instructional techniques using technology.

Third, TECC is helping make technology more affordable for individual students and faculty. HBCU students, faculty, and staff can purchase computer hardware and software from major technology providers, such as Dell, IBM, Hewlett Packard and Microsoft, at discounted prices—as low as three hundred dollars—along with low-cost financing through UNCF's e-commerce web site, which was developed through a generous contribution of technical services from Electronic Data Services (EDS).

I am pleased to inform the Members of this Subcommittee that UNCF's TECC campaign is closing the digital divide on UNCF campuses. We have already exceeded our \$80 million TECC campaign goal! Here are a few examples of the campus-based results of the TECC campaign:

- In Florida, where we have three member colleges—Bethune-Cookman College, Edward Waters College, and Florida Memorial College—UNCF provided \$4,971,583 in technology funds. One example of the use of the funds is that Bethune-Cookman established a quality infrastructure for storage and distribution of applications and data.

- In North Carolina, there are six member colleges and universities—Johnson C. Smith University, Shaw University, St. Augustine's College, Barber Scotia College, Bennett College and Livingstone College. Here we have invested \$10,858,475 in technology. With its portion of the funds, Johnson C. Smith University developed a print solution and a robust e-mail system

- In Georgia, we have six UNCF colleges and universities—Clark Atlanta University, Interdenominational Theological Center, Morehouse College, Morris Brown College, Spelman College and Paine College. The total invested is \$15,155,069. At Clark Atlanta University, computer lab capability and access were enhanced, with improved security.

- In Virginia, there are two member institutions—St. Paul's College and Virginia Union University, where UNCF funded \$1,983,539 in technology. As an example, Virginia Union University established a totally wireless campus and created mathematics computer labs for classroom teaching and accounting computer labs for teaching and student exercises.

- In Mississippi, there are two UNCF institutions—Tougaloo College and Rust College—that received a technology investment totaling \$2,782,911. Tougaloo College wired the campus buildings and upgraded desktops from outdated models for faculty, staff and computer labs.

- In Texas, we have four member colleges—Paul Quinn College, Huston-Tillotson College, Jarvis Christian College and Wiley College. These institutions received from UNCF \$3,967,664. With their share of the technology funds, Paul Quinn College provided laptops to all full-time faculty and network drops for faculty to use in the classrooms.

In addition, all 39 UNCF campuses have benefited from upgraded network infrastructures and increased access to technology for students, faculty and staff:

- UNCF institutions have received hardware, including 2,000 desktop computers, almost 1,500 network printers and more than 1,200 network servers, as well as hundreds of hubs, switches and network routers, courtesy of Hewlett Packard, CISCO, Lexmark, and Dell;

- The wiring of member institution campuses is completed—including over 3,800 network drops in learning centers and administrative and academic facilities and equipment installation and configuration; and
- Each UNCF member institution received 96,000 current versions of Microsoft software, including Windows 2000, Encarta Reference Suite 2000, Microsoft Office Suite 2000, and Encarta Africana 2000 courtesy of an ‘in-kind’ gift from Microsoft.

For the record, Mr. Chairman, I am submitting the list of these contributors.

Our goal is to ensure that every student has a computer and knows how to use it and that every faculty member has a computer and has integrated technology into their curriculum. The results will be better prepared students ready for the technology age.

Notwithstanding this progress to date, there is a great deal more to be done to eliminate the digital divide.

THE FEDERAL ROLE IN CLOSING THE DIGITAL DIVIDE

Technology is no longer the wave of the future—it is the way of the present. Every student who lacks access to current technology risks falling further behind. We believe S. 414, and its companion House bill, H.R. 1034, provide a crucial and necessary vehicle for directing Federal resources to the solution of an urgent problem.

S. 414 provides direct grants to eligible institutions, or consortia of eligible institutions: (1) to acquire hardware and software; (2) to build technology infrastructure, i.e. wiring, platforms and networks; and (3) to train institutional personnel to use both the software and hardware and to plan for the future use of technology. Based on UNCF’s TECC campaign experience—what our institutions need more than anything is the funding to purchase the instrumentation and to prepare students and institutional personnel for its usage. S. 414 will help provide those resources.

S. 414 encourages partnerships with the private sector, while avoiding the creation of a barrier to institutional progress. UNCF has experienced great success in securing private sector participation in our TECC campaign. Major corporate donors have stepped up to the plate—contributing both cash and in-kind gifts. However, experience tells us the response has not been and will not be uniform. Therefore, we applaud S. 414’s recognition of the need to waive the “matching” requirement for certain institutions. UNCF also commends the bill provisions that qualify private sector contributions made through organizations like UNCF to individual institutions as “matching” funds.

Finally, we urge the Committee to ensure, to the maximum extent possible, the equitable distribution of appropriated funds to the range of eligible institutions that will participate in the program. UNCF is available to assist you, Mr. Chairman, and Members of the Committee as you proceed with consideration of the bill.

Again, I want to thank the Subcommittee for inviting me to testify today, and to present the views of UNCF on this important legislation. I would be pleased to answer any questions you may have.

TESTIMONY TO THE WEB BASED EDUCATION COMMISSION SUBMITTED ON BEHALF OF UNITED NEGRO COLLEGE FUND (UNCF)

Contact:

Leslie L. Atkinson Director, Government Affairs

Focus of Testimony:

Access and equity, faculty training, teacher preparation, pedagogy.

Summary of Testimony:

The digital divide between black and white colleges is even greater than the divide nationally. This may be the most significant problem historically black colleges and universities (HBCUs) will have to address this century. Campuses are confronted with the daunting task of giving students the skill sets to be competitive and succeed in today’s high tech, information-based workforce—a task all the more formidable given the limited resources available to HBCUs. If the Web-based Education Commission truly aspires to ensure that all learners can take full advantage of the educational promise of the World Wide Web, if it truly wants to address the promise of the Internet for learning, it needs to begin with the most needy, with those who have the least access to computers and the Internet.

Statement

Historically Black Colleges and Universities (HBCUs), and United Negro College Fund (UNCF) institutions in particular, are a stark reflection of the national disparities in access to technology. According to the findings of a 1999 Department of Commerce report, *Falling Through the Net: Defining the Digital Divide*, African

American households are two-fifths as likely to have home Internet access as white households and the gap is widening. With regard to ownership of home computers, the gap between black and white households *grew* 39 percent between 1994 and 1998. The report indicates that the technology gap widens with lower incomes and educational attainment. African American household incomes are 59 percent of the average for white families and African Americans are half as likely as whites to have completed college. Not surprisingly, African Americans are at the short end of the digital divide.

Incredibly, the digital divide between black and white colleges is even greater than the divide nationally. Nationally, personal computer ownership is 42 percent of American households, a gap of 19 percent over the 23 percent ownership rate for African Americans. For college students nationally, 55 percent of students own their own computer—a gap of 40 percent over the 15 percent rate of UNCF students owning their own computer.

This challenge is but one of many that UNCF, America's oldest and most successful black higher education assistance organization, has confronted since its founding in 1944. It may, however, be the most significant problem UNCF member institutions will have to address this century.

Since its inception, the fundamental mission of UNCF has been to enhance the quality of education by providing financial assistance to deserving students, supplying technical assistance to UNCF institutions, and raising critical operating funds for member institutions and their students, faculty, and staff. This mission has broadened to include over 450 successful scholarship programs, internships, research and study abroad opportunities for all historically black colleges and universities (HBCUs), Hispanic-serving institutions (HSIs), Tribally controlled Colleges, and majority institutions. Despite its tremendous success, the organization remains steadfast in its commitment to enroll, nurture, and graduate students who often do not have the social and educational advantages of other college bound populations.

Now faced with the challenge of preparing students for the globally competitive economy of the 21st century, UNCF campuses are confronted with the daunting task of giving students the skill sets to be competitive and succeed in today's high tech, information-based workforce and reducing the digital divide between HBCUs and majority institutions—a task all the more formidable given the limited resources available to these schools. Moreover, if the Nation assumes a position where one measures educational quality and success by technology skills, as well as the type of technology possessed, those already handicapped will be even further disadvantaged. If the Web-based Education Commission truly aspires to ensure that all learners can take full advantage of the educational promise of the World Wide Web, if it truly wants to address the promise of the Internet for learning, it needs to begin with the most needy, with those who have the least access to computers and the Internet.

This addresses the core issue for UNCF and the nearly 60,000 students on UNCF campuses. While its student body consists of varied economic backgrounds, approximately 34 percent of all UNCF students come from families with incomes below \$25,000 (compared with 17 percent of students attending 4 years colleges nationwide). Approximately 90 percent of UNCF students require some form of financial assistance. Forty percent are the first in their families to attend college. The demographic figures alone suggest that college will be the first opportunity for many of UNCF students to be exposed to computers and the World Wide Web.

UNCF institutions' commitment to serving these students and families has meant that they have operated at a relative disadvantage, having fewer resources than majority campuses. Compared to their counterparts nationally, UNCF colleges have very small endowments and cannot fall back on sizable numbers of wealthy alumni:

- Average endowments per student at UNCF colleges are less than one-third the average for private 4-year colleges nationally.
- Alumni giving accounts for 33 percent of total voluntary support at private colleges nationally, compared to only 6 percent at private HBCUs (despite the fact that the proportion of alumni who give is approximately the same at private colleges nationally and at private HBCUs).

Needless to say, the need for information technology support at UNCF member institutions is evident. In its 1999 UNCF Technology Survey of all 39 member institutions, UNCF found that college students nationally are more than twice as likely to have access to a college-owned computer than their private HBCU counterparts—there is a computer for every 2.6 students in higher education institutions nationally and one for every 6 students at UNCF colleges and universities.

Because they come from lower family income backgrounds, students at UNCF institutions are far less likely to own their own computer than students at colleges and universities nationally—only 15 percent of UNCF students own their own com-

puter, compared with 55 percent of college students nationally. Similarly, faculty at UNCF colleges are much less likely to own their own computer than faculty nationally—only half of UNCF faculty own their own computer, compared to 71 percent of faculty nationally. Fewer than half of UNCF faculty have college-owned computers at their desks.

In addition to the lack of access to computers, the survey found that the technology infrastructure to support information technology has significant needs. The number of network servers at UNCF colleges per 1,000 students was determined to be approximately half the number for all colleges and universities. Approximately 75 percent of the existing network servers, hubs, routers, and printers were found to be obsolete or nearly obsolete and needing replacement. Fortunately, UNCF is taking a leadership role in addressing this critical issue through the implementation of an \$80 million Technology Enhancement Capital Campaign (TECC) that was publicly announced in March 2000 and is expected to continue through 2001.

Connecting to the Internet is another factor that cannot be overlooked. Taking into consideration the geographical location of these campuses (urban and rural economically depressed and/or remote areas), not to mention the economic status of large numbers of HBCU students and their families (lower income), Internet connectivity must also be factored in as a barrier to on-line learning. The amount of bandwidth available from Internet service providers impacts performance capabilities. Of course, greater bandwidth produces faster and better connections, ultimately leading to more appreciable performance. For HBCUs, this can mean increasing the opportunities to engage in collaborations with larger more research-oriented universities, and conducting immediate and timely business both on and off campus. As one can expect, the costs of providing state-of-the-art Internet connection for schools with fewer resources can be prohibitive.

Add to this the fact that UNCF institutions face increased demand for technology from higher enrollments:

- Rising enrollments at UNCF colleges have compounded the need for technology improvements and expansion. Enrollments at UNCF colleges are at their highest level in history. Between 1987 and 1997, enrollments increased more than 20 percent, approximately twice the rate of growth for majority institutions.

- Further, many UNCF colleges are located in rural areas (such as Holly Springs, MS, Hawkins, TX, Denmark, SC, Tougaloo, MS, Salisbury, NC, etc.) where there is limited access to learning resources, compounding the need to empower these institutions and their students with full access to technology.

And we cannot forget the need to fully integrate technology throughout the curriculum and the learning experiences of students. For this to happen, faculty must be empowered with the latest skills so that they can integrate technology into the classrooms, office, research laboratories, and libraries. Additionally, staff has to be trained to administer and maintain information technology systems, as well as provide user support. Moreover, being technologically literate enables teachers to be continuous learners, staying current with effective teaching practices and course subject matter. This is crucial given that they are responsible for training the next generation of our nation's workforce who will be required to have these skills themselves.

Looking at the workforce, it is also apparent that HBCUs have the strongest record among institutions of higher education nationwide in producing African American college graduates and professionals. With the current demands of the economy for more scientific and technical workers and teachers, and the parallel underrepresentation of African Americans and other minorities in these fields, this Nation has still not yet fully tapped into and utilized HBCUs and their human resource pool. Not only do HBCU graduates account for 85 percent of black physicians, 80 percent of black Federal judges, 75 percent of black lawyers, and 50 percent of black business executives, but also their graduates make up over 50 percent of black public school teachers, many of whom return to their communities to teach students who have limited exposure to the Internet and technology. We cannot underestimate the value of the development of this human capital to the overall goal of influencing learning.

Recognition must also be given to HBCUs and their role as community learning centers. HBCUs are one of, if not the, greatest asset in their surrounding communities. Their very presence undergirds the communities in which they reside. If we do not support these institutions that play such a prominent role in their neighborhoods, we lose an extraordinary opportunity to bolster these communities and utilize the Internet as a means to promote greater education attainment for less fortunate socioeconomic groups not residing in traditional campus-based settings.

Clearly, there is a need for a greater Federal investment in order to provide a minimum technology standard at low-resource institutions, including HBCUs. Such

an investment would enable these schools to have greater access to distance learning and other forms of electronic communications. This Federal support is especially critical for private HBCUs, like UNCF member institutions, and other minority-serving institutions who do not have State funds to depend on to gain access to state-of-the-art technology.

Given these circumstances, the issue for the Commission to address is whether HBCUs, who are disadvantaged in their ability to provide adequate resources and materials in the existing campus setting, can be expected to take this tremendous leap unassisted to provide a learning environment on-line. We recommend that the Commission's final report to the President and Congress include a specific Federal response for technology capacity and infrastructure development at HBCUs and other minority-serving institutions that will ensure equal access to level the playing field and close the digital divide. These recommendations should contain a fiscal commitment to developing and maintaining the technological capacity of these institutions, reducing Internet connection costs, as well as training faculty and staff on these campuses. Without such a commitment, the promise of the Internet for learning is just an illusion if HBCUs do not have the infrastructure or personnel to promote it.

UNCF schools now face the twenty-first century as maturing institutions, which are seeking to find real solutions to the many issues facing this nation. Statistics indicate that the changing demographics of this Nation will require the unquestioned accomplishments of HBCUs, whose faculty and students mirror the face of this changing America. Our challenge is to continue to produce the caliber of professionals who are capable of meeting America's needs and to take on the unique hardships facing HBCUs in order to accomplish this goal.

UNCF has the proven success and leadership in the education and training of some of this nation's most disadvantaged individuals. We urge the Commission to develop a strategic plan that advances meaningful and appropriate measures to ensure equal access to web-based learning opportunity for all Americans and look forward to working with you to achieve this important goal.

Senator CLELAND [presiding]. Thank you, Mr. Chairman, and thank you, Mr. Gray, and thank you for your wonderful service to our country, both when you were in the House and now.

I sometimes think that I am on the wrong side of the digital divide when the first thing I think about when I hear the term "CISCO" is the Cisco Kid.

We are delighted to have you here. Just a few questions, if I might. UNCF's testimony to the Congressional Web Based Education Commission stated that the digital divide between black and white colleges is even greater than the divide nationally. It went on to state that this may be the most significant problem historically black colleges and universities will have to address this century.

That is a pretty strong statement, Mr. Gray. What do you believe are the ramifications of this problem in terms of the ability of HBCUs to recruit students and faculty and compete for Federal grants?

Mr. GRAY. Well, without closing the digital divide, HBCUs will not produce students ready for the marketplace upon graduation. If HBCUs cannot produce students who are ready to meet the 21st century's technological needs, then you can expect enrollment as well as faculty decline, because no one will want to come to a place that does not prepare them for the marketplace.

And both of these points could have tragic consequences for the Nation, considering the fact that, even though only 15 percent of all African Americans attend HBCUs, these HBCUs that enroll only 15 percent graduate nearly 30 percent of all the baccalaureate graduates per year. And then when you look at graduate school, nearly 50 percent of all the African Americans who are in graduate and professional schools did their undergraduate in an HBCU. So

you are talking about having a very significant impact if that should happen.

Senator CLELAND. Thank you very much. Maybe the thing to do, if there is no objection, Senator Allen, is to hear from the other panelists, and then open it up for some questions.

Dr. Flores, glad to have you today, sir.

**STATEMENT OF DR. ANTONIO FLORES, PRESIDENT AND CEO,
HISPANIC ASSOCIATION OF COLLEGES AND UNIVERSITIES**

Dr. FLORES. Thank you, Senator. And thank you, Senator Allen, for joining the hearing as well.

Senator Cleland, and other distinguished Members of this panel, thank for the opportunity of appearing before you on behalf of the Hispanic Association of Colleges and Universities, or HACU. I am honored to testify in support of S. 414, the NTIA Digital Network Technology Program Act introduced by Senator Cleland and Senators Hollings, Stevens, Inouye and Breaux on February 28, 2001.

HACU represents more than 300 colleges and universities in the United States and Puerto Rico, including more than 200 Hispanic-serving institutions or HSIs. HACU member institutions enroll more than two-thirds of the 1.5 million Hispanics in higher education today, as well as countless non-Hispanics who enrich the diversity of the fast-growing campus communities. HSIs are the most important national resource for the education and training of Hispanics and other disadvantaged students across the Nation. This fact will only be magnified in the years ahead, as the Hispanic population continues to grow faster than any other ethnic community in the country and reaffirms its crucial role in the economic and public life of the Nation. HSIs need to be strengthened and expanded proportionate to the rapid growth of the populations they served, so our national economic prosperity and social well being are also strengthened.

We are reminded that one of every three new workers joining the national workforce today is an Hispanic, and that this proportion will increase to one of every two new workers before the year 2050. The changing nature of our economy demands that under-served and under-represented but fast-growing populations be educated and trained at increasingly higher levels for the jobs and leadership roles of the new economy.

Notwithstanding the recent bursting of the dot-com bubble, the high technology sector continues to expand at the speed of human creativity. Thus, information technologies, telecommunications, and biotechnology, among others, require increasing numbers of workers with very high skills and advanced knowledge that only a quality higher education can provide. For minority-serving institutions, MSIs, including HSIs, S. 414 offers a new and important avenue to meet educational and human resource needs of our high technology-driven economy and our increasingly complex democracy.

The digital divide is not an empty buzzword, but an unfortunate reality in our Nation. While others in society are acquiring greater access to information technology and connectivity to the Internet, the gap between the better educated and those behind them is widening each other—not only in qualitative, but quantifiable terms. The U.S. Department of Commerce series of reports “Falling

Through the Net” and recently published report “A Nation Online: How Americans Are Expanding Their Use of the Internet,” document the divide between Hispanics and whites and Hispanics and the Nation as a whole. The 2000 report indicates that more than one-half of the U.S. households have computers, and more than four of every ten have Internet access, but only one-third and about two-thirds of every ten Hispanic households, respectively.

The 2001 report, focusing on 18-to-24-year-olds actually in school or college, documents a similar pattern with persistent gaps of 20 percentage points in home computer ownership and 25 points in the use of the Internet at home. This report highlights the importance of this bill, and the importance of supporting our HSIs, because the gap between Hispanics and non-Hispanic whites lessens to 15 percentage points when one considers outside-home use, which for these students, overwhelmingly means the school or college. The 15 percent gap is still very large, but it is a sign of progress in the right direction. Similar patterns exist for ages 3 to 17 years. The 2000 report shows substantially large gaps between non-Hispanic whites and Hispanics, overall.

The latest 2001 report underlines strongly that S. 414 will help to bridge the widening digital divide for our youth by increasing their access to technology in the school setting. S. 414 may have the greatest impact on this very age group. The social and economic impact of the digital divide relates to more than just physical access. It also involves skill in the use of information technology, especially in ways that help one learn to gather information, critically analyze data and generate new knowledge and understanding. It is in these qualitative areas where S. 414 will directly strengthen HSIs and other MSIs, so that they may provide a quality education needed for the information age of the new economy. This support will empower these crucial institutions to develop and offer strategic solutions to the digital divide.

S. 414 presents great opportunities for the U.S. Congress and the President to insure that future generations of Hispanics and other disadvantaged populations will not remain stagnated at the bottom of the American educational ladder. The digital divide, as significant as it is, is but a manifestation of the persistent educational divide that is putting our Nation at risk. We applaud, Senator Cleland, your efforts to pass it.

[The prepared statement of Dr. Flores follows:]

PREPARED STATEMENT OF DR. ANTONIO FLORES, PRESIDENT AND CEO,
HISPANIC ASSOCIATION OF COLLEGES AND UNIVERSITIES

OVERVIEW

At the beginning of 2001, official government projections showed that Hispanic Americans would become the nation’s largest minority population as early as 2005. By March 2001, however, initial findings from the 2000 Census were released, documenting that the Hispanic population had undergone an unanticipated surge in growth by nearly 60 percent in one decade. The Hispanic population suddenly had reached parity with the nation’s African American population, and by at least one preliminary count, actually had exceeded parity 5 years earlier than expected.

The significance of such growth outpacing standard national projections punctuates the new sense of urgency that now must be applied to addressing persistent disparities between the country’s rapidly growing minority populations and comparatively stagnant non-minority populations. California, the most populous state, this year became the first State to report no single majority population group.

Against the backdrop of these demographic changes, the bridging of the well-documented digital divide must become a national priority.

The United States has maintained its economic stability and international leadership by capitalizing on the technological skills and innovation that have made information technology a critical economic driver for growth in virtually every market sector. The digital divide threatens to dismantle rapidly this country's information technology advantage.

Hispanics already represent one of every three new workers joining the U.S. labor force. By 2050, the U.S. Bureau of Labor Statistics projects that half of all new workers joining the U.S. labor force will be Hispanic. Failing to provide such a large part of the country's current and future work force with technological skills integral to the country's economic progress and stability threatens to cripple work force productivity, impede innovation, erode the taxpayer base, and negatively impact even national security.

The NTIA Digital Network Technology Program Act, or S. 414, comprehensively addresses the widening "digital divide." The Act targets new funds to those institutions serving the largest concentrations of Hispanic and other minority students from kindergarten through graduate school in those communities with the fastest-growing minority populations.

HISPANICS AND THE DIGITAL NETWORK TECHNOLOGY PROGRAM ACT

For the nation's youngest and still fastest-growing "minority" population, S. 414 will prove especially beneficial as a much-needed correction to decades of neglect in local, State and Federal spending and support for education and training—especially in the information technology sector.

Hispanics comprise a population that historically suffers the lowest high school and college completion rates. As of the 2000 Census, only 8.5 percent of Hispanics had earned a bachelor's degree among young adults ages 25 to 34. This also is a population that suffers disproportionately high, persistent poverty.

Hispanics comprise a population on the wrong side of the digital divide. In the last of the series of reports titled, "*Falling Through the Net*," the U.S. Department of Commerce shows that in 2000 only 33.7 percent of Hispanic households owned a computer, compared to 55.7 percent for non-Hispanic whites. Only 23.6 percent of Hispanic households had Internet access, compared to 46.1 percent for non-Hispanic whites. The just released report on computer and Internet usage, "A Nation Online: How Americans Are Expanding Their Use of the Internet," (U.S. Department of Commerce, February, 2002) documents the continuing and growing divide: only 48.8 percent of Hispanics use a personal computer at home or elsewhere, compared to 70 percent of non-Hispanic whites.

The pattern persists for individual Internet use with only 31.6 percent of Hispanics using the Internet from any location, compared to 59.9 percent for non-Hispanic whites, nearly double the percentage. This latest study, when reporting on the traditional college age cohort, 18 to 24 year olds, shows that the funding provided to HSIs by S. 414 will be put to good use. The divide continues even when focusing on the high Internet usage group of 18–14 year olds attending school or college: only 49.7 percent of Hispanic students use the Internet at home, compared to 74.3 percent of non-Hispanic white students. However, the divide lessens when comparing the outside home (primarily school or college) Internet use of Hispanics and non-Hispanic whites, 61.1 percent and 76.2 percent respectively. Money put to HSIs will help. Nevertheless, the divide clearly persists, and the need for efforts to bridge the gap remains.

The Hispanic Association of Colleges and Universities represents more than 300 member colleges and universities serving the largest concentrations of Hispanic higher education students across the country and including Puerto Rico. These institutions include more than 200 federally designated Hispanic-Serving Institutions, or HSIs, which are defined as having a full-time student population at least 25 percent Hispanic and a total enrollment at least 50 percent low income.

The reach of HACU and HSIs extends to pre-collegiate programs and partnerships, workforce development and lifelong education initiatives, which impact the entire Hispanic community. Since its formation in December 1986 as a nonprofit 501(c)(3) association, HACU has advocated for increased support to the nation's HSIs because of the integral role they play in educating a population that will have such an enormous impact on the nation's future economic and social progress.

That S. 414 specifically identifies Minority-Serving Institutions as eligible recipients of S. 414 funding is testament to the intent of this Act to reap the most benefits for each dollar invested in those institutions with the strongest expertise and widest reach to the "have-nots" of the digital divide.

At the same time, S. 414 specifically addresses efforts to correct the historic underfunding of HSIs and other Minority-Serving Institutions upon which the Nation will rely to narrow the information technology gap. For example, in the 1995–96 school year, HSIs received \$7,300 on average per student, compared to \$15,000 received by all other degree-granting institutions, according to the Integrated Postsecondary Education Data System (IPEDS) of the U.S. Department of Education.

An overriding goal of HACU and HSIs is to increase the numbers of Hispanic college graduates with advanced skills in every discipline in which Hispanics now are underrepresented. S. 414 promises not only to narrow the technology training gap, but ultimately to increase college completion rates overall by providing Minority-Serving Institutions the tools they need to enhance pre-collegiate and on-campus student success.

INFRASTRUCTURE, EQUIPMENT AND CAPABILITIES

S. 414 will allow HSIs and other Minority-Serving Institutions to apply for grants, contracts or cooperative agreements to acquire “equipment, instrumentation, networking capability, hardware and software, digital network technology and infrastructure necessary to teach students and teachers about technology in the classroom.”

Because of the persistent per-student funding disparities suffered by HSIs, these institutions—and the students, future K–12 teachers and larger communities served by these HSIs—clearly stand to benefit from S. 414 investments in infrastructure, equipment, and institutional capacity.

Most HSIs are located in major, urban areas of the country with a comparatively higher concentration of poverty and subsequently lower average tax base. Thus, these HSIs cannot depend on local dollars to adequately address the digital divide. Moreover, State support for higher education has been declining on a per-student basis in almost every region of the country.

Because the mission of these HSIs is to promote higher education access and success for a population that suffers chronically high poverty rates, most HSIs have declined to increase their tuition and fee formulas. HSIs are thus compelled to rely on the few Federal resources now available to them. S. 414 provides HSIs and other Minority-Serving Institutions a much-needed increase in Federal dollars.

FACULTY DEVELOPMENT

S. 414 will allow HSIs and other Minority-Serving Institutions to seek grants, contracts or cooperative agreements to “develop and provide educational services, including faculty development, to prepare students or faculty seeking a degree or certificate that is approved by the State, or a regional accrediting body recognized by the Secretary of Education.”

Increasing the ranks of Hispanic and other minority teachers is of paramount importance, not only to higher education institutions but also to the nation’s public schools. HSIs already award approximately 50 percent of all teacher education degrees earned by Hispanic higher education students.

However, in part because of a lack of funding for teacher education at HSIs, the shortage of Hispanic teachers is acute. While more than 15 percent of the elementary and secondary education student population is Hispanic, only 4.3 percent of public school teachers are Hispanic, according to the U.S. Census Bureau Digest of Education Statistics for 1998 and 1999. In higher education, only 2.4 percent of all full-time faculty members are Hispanic (IPEDS, 1997).

Hispanics now earn master’s, doctoral and professional degrees at the rate of 2.4 percent among the adult population—compared to 6.0 percent for non-Hispanics. Hence, the numbers of Hispanics attaining advanced degrees must more than double to achieve parity. Yet, only 20 percent of HSIs offer a master’s degree. Less than 12 percent of HSIs offer a doctoral degree. S. 414 directly addresses the need to increase the institutional capacity of HSIs to produce more teachers with advanced degrees.

TECHNOLOGY IN THE CLASSROOM

S. 414 will allow HSIs and other Minority-Serving Institutions to seek grants, contracts or cooperative agreements to “provide teacher education, library and media specialist training and preschool and teacher aid certification to individuals who seek to acquire or enhance technology skills in order to use technology in the classroom or instructional process.”

Enhancing teacher education, classroom technology use and instructional skills will focus on expanding the only means of technology access for many of the young-of-the-“have-nots” of the digital divide. The latest report from the NTIA, “A Na-

tion Online,” documents the importance schools have in providing computer access to Hispanic students. The study looks at three categories of use: students that have access to computers only at home, those that use computers both at home and at school, and those who use computers only at school. Home only use accounts for 6.7 percent of 10–17 year old Hispanic students, compared to 8.5 percent of non-Hispanic white 10–17 year olds. When one looks at “school *and* home computer use,” the category of use where most (71.8 percent) non-Hispanic whites fall, only 38.6 percent of Hispanic 10–17 year olds have this dual access. Most tellingly, in the category of “school only,” 38.9 percent of Hispanic teens are dependent on this sole source of computing technology, compared to only 15.1 percent of white non-Hispanics. That the overall gap in total computer usage is no more than 84.2 percent for Hispanic and 95.4 percent for non-Hispanic 10–17 year olds is due to the dramatic role played by schools in providing technology access to Hispanic students.

The divide for these children perniciously persists when one considers the driving force for technology today, the Internet. Overall Internet usage, both at school and at home, is only 47.8 percent for Hispanic 10–17 year old youngsters, compared to nearly 80 (79.7) percent for non-Hispanic white children. In other words, more than double the percentage of Hispanic children do not use the Internet at all compared to non-Hispanic whites, 52.2 percent and 20.3 percent, respectively. Clearly, money put to enhancing the technology skills of future and current K–12 teachers is money toward closing the persistent digital divide.

The long experience and proven expertise of HSIs in addressing minority public school and community needs makes these institutions a vital partner in efforts to enhance teacher technology training, classroom and instructional skills. S. 414 capitalizes on the geographic proximity, cultural understanding and existing community outreach of Minority-Serving Institutions by inviting their active participation in new technology initiatives in the nation’s public schools.

TECHNOLOGY PARTNERSHIPS

S. 414 will allow HSIs and other Minority-Serving Institutions to seek grants, contracts or cooperative agreements to “implement a joint project to provide education regarding technology in the classroom with a State or State educational agency, local education agency, community-based organization, national nonprofit organization, or business, including minority business or a business located in HUB zones, as defined by the Small Business Administration.”

Joint projects and partnerships to address classroom technology needs in a comprehensive way are a practical, effective means to meet the technology needs of the nation’s minority communities. This component of S. 414 encourages inclusiveness and the establishment of a wide base of community support and expertise.

HSIs, historically hampered by funding disparities, have come to depend on the combined strengths and added resources of such partnerships to address issues ranging from adult workforce development and lifelong learning to pre-collegiate preparatory programs.

For example, HSIs are actively participating in new Workforce Investment Act initiatives in partnership with local businesses, community-based organizations and State agencies. Several HSIs have become partners in the HACU Proyecto Access program—a pre-collegiate summer program for middle school students designed to enhance technology, science and mathematics skills.

HSIs and other Minority-Serving Institutions already have established the foundation for forming effective partnerships to address technology disparities. S. 414 provides the funding and infrastructure support to capitalize on the proven effectiveness of such partnership approaches in addressing the digital divide.

LEADERSHIP DEVELOPMENT

S. 414 also will allow HSIs and other Minority-Serving Institutions to “provide leadership development to administrators, board members and faculty of eligible institutions with institutional responsibility for technology education.” Historically underfunded HSIs can readily benefit from this investment in support of those leaders who are charged with the strategic direction and supervision of efforts to enhance technology infrastructure, training and outreach.

HSIs and other Minority-Serving Institutions recognize the critical role of leadership development in efforts to close the digital divide. For example, the Advanced Networking with Minority-Serving Institutions (AN-MSI) project includes a focus on assisting campus leadership in information technology training. AN-MSI is the result of a National Science Foundation grant to EDUCAUSE, the premier information technology association in higher education and now strategic partner with

MSIs. A sub-award was made to the Education, Outreach and Training Partnerships for Advanced Computational Infrastructure (EOT-PACI).

EDUCAUSE established mutually beneficial partnerships with HACU, the American Indian Higher Education Consortium (AIHEC), the National Association for Equal Opportunity in Higher Education (NAFEO) and other associations and councils representing Minority-Serving Institutions. Leadership development aspects of this ongoing project have included the involvement of administrators of HSIs and other Minority-Serving Institutions at Seminars on Academic Computing, a recent Technology Summit, and a Hispanic digital divide executive session for HSI presidents at the HACU Annual conference done collaboratively with the IBM Foundation.

The inclusion of leadership development in S. 414 is another example of the Act's potential for success by strategically addressing the nation's digital divide on so many fronts—from enhancing teacher skills in the classroom to supporting administrative leadership development on the college campus.

CONCLUSION

For 15 years, HACU has served as the nation's leading voice for those colleges and universities serving the largest concentrations of Hispanic higher education students. HACU also is a member of the Alliance for Equity in Higher Education, co-founded by the American Indian Higher Education Consortium and the National Association for Equal Opportunity in Higher Education. The Alliance represents a new, united front on concerns shared by all Minority-Serving Institutions—including the effort to bridge the digital divide between minority and non-minority populations.

Clearly, HSIs and other Minority-Serving Institutions have the expertise and the proximity and commitment to their students and communities to provide front-line leadership and support in the effort to close the information technology gap. However, these institutions cannot succeed without the support of Congress and its endorsement of a substantial investment in Federal dollars.

S. 414 proposes a comprehensive approach to address the digital divide aggressively, targeting potential funding to those higher education institutions serving the largest concentrations of minority students in those communities with the fastest-growing minority populations. S. 414 is a strategically sound, cost-effective response to a challenge the Nation can no longer afford to leave unanswered.

Senator CLELAND. Well, thank you very much, Dr. Flores, and we are proud to have you here. I think that is some fascinating information you shared with us, and we look forward to getting into questions with you.

Dr. Humphries, glad you are here. And welcome aboard. We look forward to hearing from you.

STATEMENT OF DR. FREDERICK S. HUMPHRIES, PRESIDENT AND CEO, NATIONAL ASSOCIATION FOR EQUAL OPPORTUNITY IN HIGHER EDUCATION

Dr. HUMPHRIES. Thank you very much, Senator Cleland. Senator Allen and Senator Cleland, I am deeply appreciative of the opportunity to participate in this hearing on Senate Bill 414, the National Technology Instrumentation Challenge Act. This legislation seeks to amend the National Telecommunication and Information Administrative Organization Act and ultimately strengthen our Nation's digital network technology program by providing targeted and increased Federal support to minority-serving institutions to help close what is commonly referred to as the digital divide.

I would like to thank you, Senator Cleland, and the original sponsors for sponsoring this bill. I must acknowledge their vision, compassion and leadership in recognizing the need for Congress to take a giant step in closing the digital divide, and to stimulate national awareness and involvement in this area. This effort, includ-

ing today's hearing, truly is an historic event. And I thank you, sir, for causing this.

A bit about NAFEO. NAFEO serves as the national umbrella organization for a combined membership of 118 predominantly and historically black colleges and universities: 103 historical black colleges and universities, and 15 other predominantly black institutions. The organization takes lead responsibility for the development and dissemination of public policies, programmatic efforts, and strategic and educational materials that one, enhance the role of the historical black colleges and universities generally and two, promote African American students enrollment and attainment, specifically.

NAFEO is comprised of institutions of higher education that represent a broad spectrum of interests, public and private, large and small, urban and rural, liberal arts, agricultural, and research. Of the HBCUs that belong to NAFEO, 46 percent are public and 54 percent are private. The organizations membership is comprised of 2-year and 4-year institutions as well as schools that offer advanced and professional degrees, and they are situated in every quarter of the country, the District of Columbia, and the Virgin Islands. More than 300,000 undergraduate and 50,000 graduate students are enrolled in NAFEO institutions. The HBCUs represented by NAFEO are the largest producers of African American teachers and baccalaureates in science and technology. A higher percentage of black Ph.D. candidates from HBCUs complete their degrees than those from non-HBCUs, 42 percent each year, to be exact.

We are also building our Ph.D. program to address the under-supply of African Americans in the science and technology field, as well as expanding our capacity in all professional degree programs.

Despite the significance of these contributions, of historical black colleges and universities, and other minority-serving institutions, the students and communities we serve are woefully at risk of getting stuck, of falling through the cracks of our Nation's digital highway. And I would like to come a little bit differently at this issue.

My oral comments were planned to be very much presenting data on the differences between blacks and whites and Hispanics and whites, and the woeful inadequacy of our infrastructure.

But I would like to say to the Subcommittee that the reason why we are getting so far behind in this digital divide is one of the unintended consequences of Federal funding where 80 of the institutions in our American higher education system get 70 percent of all of the Federal dollars.

I call to your attention that that National Science Foundation sponsored a particular program where the major research institutions were enabled to come in for grants, wherein they got funding from the National Science Foundation to enhance their broadband capabilities in the country. Perhaps you are all aware that Qwest has put a, what you would call a major trunk broadband capability across the southern United States, certainly through Georgia, Senator Cleland, all the way to Wichita Falls, which will accommodate and give rise to total digital communication, which has telecommunications capability—as well as telecommunications capability.

There are not any historical black colleges nor any minority-serving institutions who have connectivity to this broadband capability. The absolute requirement for the kind of equipment and technology you need on the local campus to be able to connect to this broadband system is simply not within our reach. And so we can talk about the infrastructure which allows us on our campuses to connect the buildings, the academic facilities, the libraries, the laboratories, the dormitories.

That is fundamental, basic stuff.

And in the report that we talk of in the presentation that we have given you, we have presented to you data which shows that even at this very fundamental level, that we are woefully inadequate in Internet connectivity.

And so when you start talking about the upper level of the information highway, when you are talking about the advanced technologies prevalent in the information and technology, this thing that you speak of in terms of an aristocracy in technology vis-a-vis the proletariat, which is the historical black colleges and other minority-serving institutions, yes, the gap widens and it widens because of the ability of the major institutions to utilize resources that the Federal Government gives through its commerce and technology, through its Department of Energy, through the DOD research programs, and through the National Science Foundation; that the monies that are garnered through these grants and contracts provide to the major institutions the wherewithal that we are asking for, just the basic stuff that you are asking for in your bill.

So when your colleagues offer to you that you are offering something special to us, you need to tell them about the many dollars that this government, this agency, give to the major institutions via grants and contracts that allows them to expand their informational technology capabilities which we do not compete in and which we cannot compete in. And therefore, this bill represents an answer that allows these institutions to at least at the basic level, have infrastructure for technology for the thousands of students that attend our institutions.

And yes, this Subcommittee should know that we educate poor kids. We educate kids who come from families that make a little bit of money. And they cannot buy all of the kind of stuff that is available which leads to kids having some facility and some capability in the information society.

So one of the things that we in that bill want to put on your mind today and give to you to consider, we would like to suggest that some way we find to fund kids to purchase computers, particularly in the freshman year of college. We want to suggest that those students who are fully Pell eligible; that is, at the new level of \$4,000; they are fully Pell eligible, meaning that they are really, really poor; that some way we include money that we can apply for that will provide these students, freshmen at our institutions, the ability to have a computer; that we, the institution, by applying for a grant from one of these programs that focus on our particular institution, that money is included in that program.

And one of the places that we would like to suggest that maybe you want to work with your colleagues who fund the Title III, Title

V programs, that we there some money allocated within those dollars which would, as they are appropriated to the institutions, which would give them the wherewithal to respond to those students that are entering the capability of providing a computer, so that if they enter college, they enter with the ability to have a computer and to get hooked up to the Internet, where we can best utilize the dollars given in this program of Senate Bill 414.

I cannot, in my final comment to you, I cannot stress enough to you the importance of your bill, Senator Cleland. It is visionary thought, it is much needed thought, and it is the kind of program, when the Internet came and the information technology and the information highway and all these companies got going, and then all of a sudden the Nation found that it had a shortage of qualified people to man the new jobs that were being created by e-commerce and the technological-driven things, to me as a person who had been working in human resource development for a lifetime in the minority community, I saw this as a great opportunity for this country to help solve the inequality in socioeconomic status by making the corporate world work on the problem of taking from the roots of our society and training people to take these high-paying jobs that were created.

We responded by HB-1 visas, and 180,000 people came into our country. September the 11th has kind of changed those things, and now it is even more important, and a wonderful thing, we now have the focus on developing an underdeveloped segment of our society, which can benefit from the Cleland bill, which empowers us to turn our competitive students. And perhaps you on this Subcommittee can suggest to your corporate sector friends that they must join you in helping to develop the curriculum capability in computer science and the equipment of these schools so that this segment of our population can come out fortified to take these jobs, and help add to the economic drive as the sustenance of this Nation.

So I just think you have done a wonderful job here, Senator Cleland. I recommend that you do everything possible. And we stand ready to do everything possible that we can to help make this bill become a reality. It is needed and we must get it done.

[The prepared statement of Dr. Humphries follows:]

PREPARED STATEMENT OF DR. FREDERICK S. HUMPHRIES, PRESIDENT AND CEO,
NATIONAL ASSOCIATION FOR EQUAL OPPORTUNITY IN HIGHER EDUCATION

INTRODUCTION

Mr. Chairman and distinguished Members of the Senate Commerce, Science and Transportation Committee and the Subcommittee on Science, Technology and Space, I am Dr. Frederick S. Humphries, President and Chief Executive Officer of the National Association for Equal Opportunity in Higher Education (NAFEO). First, I want to thank you for the opportunity to participate in this hearing on S. 414, the National Technology Instrumentation Challenge Act. This legislation seeks to amend the National Telecommunications and Information Administration Organization Act and ultimately develop a digital network technology program by providing targeted and increased Federal support to Minority-Serving Institutions (MSIs) to help close the digital divide. Second, I would like to thank Senator Cleland and the original co-sponsors for sponsoring this bill. Moreover, I must acknowledge their vision, compassion, and leadership in recognizing the need for the Congress to take a giant step in closing the digital divide and to stimulate national awareness and involvement in this area.

This is truly an historic event. By having this hearing and addressing the technology and digital divide issues that affect MSIs, we are moving one step closer to closing the divide. As the CEO of NAFEO and a former college president, I believe that this hearing is an exemplary way to put MSIs in a leadership role—by being at the table to help formulate policy and assist in the decisionmaking process for issues that directly affect our institutions. Moreover, the ultimate enactment of this legislation will put MSIs in a position to better address national science and technology (S&T) and workforce objectives, including engaging those communities where the digital divide is most serious. I am sure that this hearing will hasten a dialog that is long overdue.

BACKGROUND

NAFEO serves as the national umbrella organization for a combined membership of 118 predominately and Historically Black Colleges and Universities (HBCUs)—103 HBCUs and 15 other predominately Black Institutions. Our mission is to champion the interests of our member institutions through the executive, legislative and judicial branches of Federal and State government, and to articulate the needs for a system of higher education where race, ethnicity, socio-economic status, and previous educational attainment levels are not determinants of either the quantity or quality of higher education. The organization takes lead responsibility for the development and dissemination of public policies, programmatic efforts, and strategic and educational materials that: (1) enhance the role of HBCUs, generally, and (2) promote African American student enrollment and attainment, specifically. NAFEO is comprised of institutions of higher education that represent a broad spectrum of interests—public and private, large and small, urban and rural, liberal arts, agricultural, and research. Of the HBCUs that belong to NAFEO, 46 percent are public, and 54 percent are private. The organization's membership is comprised of 2-year and 4-year institutions, as well as schools that offer advanced and professional degrees, and they are situated in every quarter of the country, the District of Columbia, and the Virgin Islands.

At the time of *Brown vs. Topeka Board of Education* and the end of de jure segregation in the public schools, but not the end of racially exclusive, whites-only systems of higher education in the South or nearly all-white systems of higher education in the north, HBCUs were producing more than 90 percent of all Black baccalaureates and more than 90 percent of all Blacks who went on to become doctors, lawyers, and PhDs. Now, HBCUs still enroll the largest concentration of both the well and under prepared African American students, many of whom come from high poverty school systems and low-income families. While HBCUs enroll approximately 16 percent of all African American undergraduate students, these institutions graduate about 30 percent of all African Americans who complete their baccalaureate degrees annually. HBCUs are the largest producers of African American teachers and baccalaureates in science and technology. Additionally, a higher percentage of Black PhD candidates from HBCUs complete their degrees than those from non-HBCUs, 42 percent each year, to be exact. We also are building our PhD programs to address the undersupply of African Americans in the science and technology fields as well as expanding our capacities to offer professional degree programs.

The enrollment and graduation rates of these institutions are most sensitive to even the slightest shifts in State and Federal policies affecting college admission, retention, and completion. Therefore, for the last 40 years, HBCUs have served as the barometer that gives the earliest and most reliable indicators of whether new educational policies instituted by Federal, state, or private sector policymakers will advance or retard the movement toward equality of educational opportunity. Even with all of this, the HBCU community continues to be under-recognized and underfunded as a national research and development laboratory for measuring the effects of this country's existing and evolving educational policies, particularly at the Federal level.

S. 414 AND RECENT FINDINGS RELATED TO INTERNET TECHNOLOGY

There are two major dimensions to the digital divide: (1) providing access to information technology (IT); and (2) expanding the application and use of information technology. S. 414 seeks to address both of these issues and helps to remedy the issue of the digital divide that exists among HBCUs and other MSIs as well as the communities they serve. The bill seeks to strengthen the institutional capacity by providing up to \$2.5 million per institution for:

1. Equipment, instrumentation, networking capability, hardware and software, digital network technology, and the infrastructure necessary to teach students and teachers about technology in the classroom;

2. The development of educational services, including faculty development and student preparation;

3. Teacher education, library and media specialist training, and preschool and teacher aid certification to individuals who seek to acquire or enhance technology skills in order to use technology in the classroom or instructional process;

4. The implementation of a joint project to provide education regarding technology in the classroom with a State or local education agency, community-based organization, national non-profit organization, etc.; and

5. Leadership development to administrators, board members, and faculty of eligible institutions with institutional responsibility for technology education.

A 1999 Department of Commerce study, *Falling Through the Net: Toward Digital Inclusion*, found that although more Americans than ever before have Internet access, a “digital divide” exists among “those with different levels of income and education, different racial and ethnic groups, old and young, single and dual-parent families, and those with and without disabilities.” Other national studies show similar findings, that among MSIs, there exist serious areas of digital divide in student Internet access, high-speed connectivity and insufficient infrastructure.

There is a large segment of society that is cutoff from the infinite possibilities of the Internet revolution, because they do not have computer access and/or knowledge of web capabilities. As a result, there is lost opportunity for this segment to secure a better education, better employment, communication and commercial options, as well as needed health care information and assistance.

In 2000, with the support of the Department of Commerce, NAFEO completed a study entitled *Historically Black Colleges and Universities: An Assessment of Networking and Connectivity* (see appendix). Half of the HBCUs surveyed did not have computers available in the location most accessible to students—their dormitories. Other findings of this landmark study, which appear in the appendix, include the following:

- Most HBCUs do not have high-speed connectivity to the Internet and World Wide Web. Only three percent of these colleges and universities indicated that financial aid was available to help their students, 75 percent of whom do not own their own computers, close the “computer ownership gap.”

- Approximately 88 percent of HBCUs have access to T-1 lines from their local ISPs and operating companies and connect to their networks using single or multiple T-1 lines. However, a single T-1 line is not sufficient to provide a large campus with effective bandwidth for 21st century connectivity. The more bandwidth capacity an HBCU has, the more possibilities that institution may have for participation in advanced projects such as Internet2, which may be one of the key areas that hold back HBCUs from making the digital leap into this century.

- Extensive connectivity to a global community appears to be underutilized among HBCUs. Connectivity beyond the campus borders only extends to regional and/or statewide networks, or in a few instances to the Federal Government.

- Out of the 80 HBCUs responding to the Commerce study, only 31 percent indicate that they network with State college systems, 13 percent network with the K-12 school districts, 20 percent with the Federal Government, and 5 percent with commercial vendors.

- Seventy-six percent of the participating schools estimate that fewer than 25 percent, or 1 out of every 4 HBCU students, personally own computers. This contrasts with the 1999 Campus Computing Study, which reports that among all institutions of higher education, 49 percent, or about one out of every two students personally own their own desktop or notebook computers.

NAFEO'S LONG TERM GOALS

Based on the findings in the HBCU Technology Assessment Study, NAFEO's mission is to foster a positive environment for the achievement of the following long-term goals mentioned in that study:

- To strengthen the capacity of HBCUs to participate in the national effort to improve the Nation's technology and telecommunications infrastructure and research enterprise;

- To improve the quality of education for students attending HBCUs, by encouraging policies and leadership that support the telecommunications infrastructure necessary for campus wide connectivity and workforce productivity; and

- To strengthen NAFEO's capabilities and role as a national service organization that provides research, evaluation, and dissemination of information about telecommunications and technology infrastructure to HBCUs and minority institutions.

HBCUs have been the trailblazers and standard bearers for equal opportunity and have been the beacons of light for African American communities for over 150 years

and they provide the optimum venue to help this Nation remedy problems associated with the digital divide. Without these institutions, this Nation would not have African American participation in the professions, the military, the legislatures, and in business. Clearly, it is in the best national interest to seize the opportunity to more fully utilize HBCUs to address the crises of the digital divide in African American communities and other communities of color. As stated previously, the passage of S. 414 is a step in that direction. This legislation will offer a significant opportunity for those institutions serving the largest concentrations of the nation's minority and low-income students to keep pace with the advancing technologies of the 21st century.

Additionally, passage of S. 414 will serve as a catalyst that promotes a technological and research trend that is so desperately needed at these institutions. It will go a long way in promoting the establishment of a technology-based curriculum that enables HBCUs to recruit, retain, and graduate students who are more competitive in the increasingly technology-based global economy and in the graduate and professional institutions. It will allow HBCUs to have more involvement in basic research to develop new technologies, which is the most desirable and effective method for assuring that HBCUs have the amount and level of technology needed for their administration, academic programs, student usages, and community outreach. It also will assist HBCUs in working with IT corporations and efforts to have them "mentor" HBCUs. For instance, consistent with provisions contained in the measure, major companies could adopt one college and work with the institution in assessing and implementing long-term IT strategies. Ultimately, this funding will allow the institutions to access and increase their individual technology needs, thereby making them more competitive.

UNIQUE PROVISIONS AND SPECIAL SIGNIFICANCE OF S. 414

Clearly, the provisions of S. 414 address almost all of the technology deficiencies identified in the NAFEO study by providing grants up to \$2.5 million for each eligible institution to address technology needs related to infrastructure, networking, faculty development and student preparation, teacher education and media specialist training, community outreach, and leadership development. Such aid would not only strengthen our technological capabilities, but also enhance our inter-institutional relationships and our community outreach. HBCUs and other MSIs would truly become leaders in helping to close the digital divide, which is widest in the communities we serve.

We are aware that the Commerce Department alone cannot shoulder the responsibility for closing the digital divide, however, the enactment of S. 414 will make an indelible and profound contribution to national goals related to global competitiveness. Moreover, its breadth of permissible activities serves as a model that encourages and can be easily replicated by public and private entities that need to be enlisted in this monumental effort.

There are two unique provisions that we think will broaden the reach of S. 414:

1. *It provides incentives for private and public contributions, and partnerships to address the technology needs of MSIs and to improve internet access and technology usage in the communities they serve.* MSIs should be involved in the research and development of cutting edge technology to assure that they can secure and maintain state-of-the-art technology. Furthermore, they should be involved in the economic development of their communities around the new economy, including training as well as entrepreneurial development.

2. It includes provisions for the assessment of this initiative to ensure that the funding needs of MSIs are met and that there is an equitable distribution of the funding. MSIs are diverse programmatically and geographically. Also, by virtue of the populations served, they have limited resources to stay abreast of this fast paced technology revolution. The role of the Department of Education in evaluating this project annually to determine its effectiveness in meeting the goals of this legislation and to determine appropriate levels of funding is very important. We hope, therefore, that adequate resources will be made available to carry out this function and to assure future support of this project.

CONCLUSION

In conclusion, I want to assure you that NAFEO, AIHEC, and HACU are collaborating through the Alliance for Equity in Higher Education on matters affecting the future of our institutions and the communities we serve. The Alliance, with support from the Kellogg and Mott Foundations, works to build a consensus among MSIs in order to enhance our abilities to address common public policy issues. This year, we are devoting much of our attention to our technology needs, and we have formed

an expert group made up of persons from our institutions to help assess our capacities and to develop strategies for addressing them. The Alliance, based in Washington, DC, also has submitted testimony for the record on behalf of its members and in support of S. 414. Additionally, we will be working collectively with the United Negro College Fund and other supporters for passage of S. 414.

This concludes my testimony. Again, on behalf of the National Association for Equal Opportunity in Higher Education and its member institutions, I thank you for the opportunity to appear before you today. I would be happy to answer any questions.

Senator CLELAND. Thank you very much, Dr. Humphries. And that is the reason we are having the hearing today, to move this bill forward if at all possible. Thank you for your great contribution.

Dr. Monette, welcome to the Senate here and this Subcommittee.

STATEMENT OF DR. GERALD "CARTY" MONETTE, PRESIDENT, TURTLE MOUNTAIN COMMUNITY COLLEGE; CHAIRMAN, COMMITTEE ON TECHNOLOGY DEVELOPMENT, AMERICAN INDIAN HIGHER EDUCATION CONSORTIUM

Dr. MONETTE. Actually from North Dakota, Senator.

Senator CLELAND. That is what I thought. It says Turtle Mountain Community College. You are the President of Turtle Mountain Community College and the Chairman of the Committee on Technology Development of the American Indian Higher Education Consortium on Oronoco Street in Alexandria. Sorry about that.

You came from what part of North Dakota?

Dr. MONETTE. A place called Turtle Mountain. It is in north central North Dakota, right up on the Canadian border.

Senator CLELAND. We are glad to have you.

Dr. MONETTE. Thank you.

Thank you, Senator Cleland. And thank you too, Senator Allen. I also want to thank the rest of the Subcommittee for inviting me here to talk today. I am honored to be here as a spokesman for the American Indian Higher Education Consortium and also from my institution, which is the Turtle Mountain Community College located in North Dakota on the Turtle Mountain Band of Chippewa Indian Reservation. On behalf of the 32 Tribal Colleges and Universities, we want to express our full support for S. 414.

I also want to thank our own North Dakota Senator, Byron Dorgan, who was here earlier, for all the work that he does for Indian people and for tribal colleges. And he is not here to hear this, but Senator Dorgan of course has been a champion for many issues. And he is always willing to take the lead and sometimes stick his neck out for us. And we really appreciate that, and perhaps the message will be relayed to him.

I have a full statement that has been prepared and has been presented for the record. I also have a written statement that I am going to refer to. It summarizes some of the main points of the larger statement.

I want to make sure that I talk about three things. One of them I want to tell you about is tribal colleges. I think it's important that I take a little time to do that so that everybody has a little bit of understanding of who we are. Then, I want to discuss technology in Indian Country and strategies that tribal colleges are

taking to bring new opportunities to all Indian people. And third, make a few comments on the legislation and some other legislation.

First, tribal colleges are a fairly new movement in the country. In the mid-1990s, the Carnegie Foundation for the Advancement of Teaching dubbed the American Indian Tribal Colleges and Universities "higher education's best kept secret." And that description has stayed with us, because it is fitting for a number of reasons.

First of all, we are very small institutions and we are located in some of the most rural regions of the country. In fact, I was interested in Senator Wyden's mention of a report that he read; I believe it was in the newspapers; and also the other studies that were actually referred to. But the new data report that Senator Wyden had mentioned does not even include American Indians except as a small footnote. And the reason for that is because our population is so small, and our influence is so small, that we rarely are included in such studies.

And what that does, the impact of us not being included in many of the studies and initiatives that take place results in us not having access to many of the opportunities that the rest of America enjoy. I was interested in that study and those comments.

We may be young, but we are also growing very fast. The first tribal college was begun on the Navajo Nation in 1968. Since that time, we have grown to 32 institutions spread throughout the United States, our enrollments have increased by more than 1,300 percent. Most of the colleges are located in the North Central part of the country, but not all of them. We have some in the Southwest and the Northwest and in the Great Lakes regions of the country. All of the tribes in North Dakota and South Dakota have colleges, as do those in Montana. The Great Lakes tribes also have institutions. And we are expanding into other regions. There are colleges now located in Alaska.

In only a few decades, in some cases less than 20 years, we have made tremendous impact on Indian Country. For example, and this is typical of all the institutions, Salish Kootenai College, located in Montana, which is in Senator Burns' State, also a great supporter for Indian programs and Indian people. In Montana, in 1976, less than 30 members of the tribe had earned a college degree. Well, since that time, Salish Kootenai College has graduated more than 400 tribal members. And that is a similar story throughout Indian Country.

At Turtle Mountain in 1972 we had five individuals that had college degrees, and today there are hundreds of individuals that have college degrees. And many of those individuals come home. They attend our institutions, transfer to 4 year institutions, earn a degree and come home. That is the contribution I think tribal colleges are making to change the infrastructure of Indian reservations.

Many of the colleges are offering bachelors' degrees today for the first time, graduating tribal members with 4 year degrees, mostly in education, but ready to expand into other areas, such as technology. According to one study, 75 percent of the tribal college graduates are employed in the local community or go on to another institution of higher education. And by comparison, American Indians who leave the reservation and enroll in mainstream colleges directly from high school have a failure rate of about 80 percent.

Yes, we have grown fairly fast over the last three decades, but there are many serious challenges that we face. Most pressing, we remain the most poorly funded institutions of higher education in the country. Tribal colleges are not State institutions; and consequently, receive little, in most cases no State funding. Tribal governments that have chartered tribal colleges are not the small handful of wealthy gaming tribes located near major urban areas. Rather, our tribal governments are of the poorest governments and are located in the poorest areas of the country.

In fact, three of the ten poorest counties in America are home to tribal colleges. My institution at Turtle Mountain is located in Rolette County, which is the 31st, I believe, poorest county in the country. So we represent some real rural, poor areas. We are trying to make change.

The Federal Government, despite its trust responsibility and treaty obligations, has never fully funded our institutional operations, the Tribally Controlled College or University Assistance Act. For fiscal year 2003, the President's budget proposes an appropriation of slightly more than one-half of the authorized amount, or about \$3,500 per full-time Indian student. Funding inequities in our operational support deepens problems such as the digital divide. And until Congress and the Administration address these shortfalls, we cannot cross the chasm that separates us.

To be sure, gentlemen, this country suffers a serious divide. It is a division based on race, income and location. But to tribal colleges, information technology represents a tremendous digital opportunity. And we are determined to move forward, but barriers exist. Less than 50 percent of the homes on Indian reservations have a telephone, compared to nearly 95 percent nationally. Less than 10 percent of American Indian homes have computers.

For adequate Internet-based data and information sharing, most universities are requiring at least DS-3 connectivity. Only one tribal college currently has funding for high bandwidth connectivity, and it is not in place yet. All the tribal colleges have some degree of T-1 access, although most have only fractional T-1 access. One of our biggest problems, and there are many, the tribal colleges struggle to hire and retain technicians.

We are determined to turn these statistics around. A few years ago we committed ourself to an initiative aimed at bringing our institutions to a circle of prosperity, a place where tribal traditions and new technologies are woven together to build stronger and more sustainable communities. To develop strategies for achieving our goals, the tribal colleges undertook a process never before attempted in Indian Country. We asked more than 150 individuals from all sectors of business, government, and our communities to help us develop, plan and refine a process for bringing opportunities of technology to Native America.

To begin our work, we used the methodology called a Prosperity Game. It is a fast-paced, interactive simulation developed by Sandia National Laboratory from strategic war games and designed to help create and sustain productive change through strategy development and negotiation. During the three-day Prosperity Game, an outline of a plan emerged, which has refined into the National Framework for Tribal College Technology.

To guide this important effort, the National Framework for Tribal College Technology, (AIHEC), the American Indian Higher Education Consortium, has established a national coordinating office and launched a series of activities. And I am going to name a few.

One of them is the AIHEC virtual library program. We partnered with the University of Michigan and others to build a tribal college virtual library that would enhance the meager library resources traditionally available in Indian Country. The library, which uses open source software, has been installed at more than 20 of the tribal colleges. And already the virtual library has made a difference in accreditation status of at least five tribal colleges.

Last fall, the National Science Foundation awarded AIHEC a planning grant to begin to collaborate with NSF's National Science Mathematics, Engineering and Technology Education Digital Library Community, with the goal of ensuring a role for American Indians in the development of this national effort.

Another initiative is with AN-MSI. For the past few years we have been actively involved with the Advanced Networking with Minority-Serving Institutions Initiative, an NSF-funded project managed by EDUCAUSE. The project is designed to improve networking architecture and Internet connectivity in remote areas served by MSIs. Although the funding is extremely limited, a number of initiatives are underway and we are actively leveraging our resources to create new opportunities.

I want to mention one of these projects, because it is close to home. In order to provide high speed connectivity to remote campuses we are piloting state-of-art wideband wireless technology at four tribal colleges, including Turtle Mountain. And through this effort, the college will weave a wireless web of connectivity around our reservations, connecting institution sites, tribal offices, K-12 schools to one another, and then eventually, with other funding, to the Internet, to a high speed backbone running between the college and existing Internet to access points, such as our State university system.

Of course, our long-term goals are to enable each tribal college to acquire and sustain a high speed broadband connectivity and then to build a Tribal College/University access grid that will weave a common web around the colleges and Indian Country. At the same time, we will be establishing collaborative relationships with people and institutions worldwide.

I want to make a few comments on the legislation and some legislative recommendations before I close here.

Senator CLELAND. Dr. Monette, if you will just kind of begin to wrap it up.

Dr. MONETTE. OK, very good.

The legislation proposed by Senator Cleland would enable our progress to continue and we are looking at a few initiatives. In addition, we have what we are calling Indians Into Technology, and that would address the problem of information technology individuals on the reservations and at the colleges, and we are looking at a program that is similar, called "Indian Into Medicine," that is run by the University of North Dakota at Grand Forks. Basically, it takes Indian people from the elementary, middle school, secondary, and college into the University, trains them to use technology and

then allows them to return to the reservation to work with the tribal members.

There are other things that we are searching for. The bill, S. 414, allows participation, as the other gentlemen have said very strongly, whether we are seeking basic connectivity or to upgrade existing equipment to build an access node. And opportunities must be available to all.

In closing, Mr. Chairman, I want to reiterate our desire to work with you as builders and users of the new digital network technology program. We embark on new collaborations. I urge you to trust the tribal college leadership, allowing them the flexibility to design and develop meaningful and relevant strategies to address the unique and special needs of Indian communities. In so doing, we will create the kind of program that welcomes and even encourages participation by all segments of our diverse and rich Nation. And I thank you for your patience and information.

[The prepared statement of Dr. Monette follows:]

PREPARED STATEMENT OF DR. GERALD "CARTY" MONETTE, PRESIDENT, TURTLE MOUNTAIN COMMUNITY COLLEGE; CHAIRMAN, COMMITTEE ON TECHNOLOGY DEVELOPMENT, AMERICAN INDIAN HIGHER EDUCATION CONSORTIUM

Mr. Chairman and distinguished members of the Committee, thank you for inviting me to testify before your subcommittee today. My name is Dr. Gerald Monette. I am honored to be here as spokesperson for the American Indian Higher Education Consortium and as president of Turtle Mountain Community College, which is located in north-central North Dakota on the Turtle Mountain Band of Chippewa Reservation.

On behalf of this nation's 32 Tribal Colleges and Universities (TCUs), I want to express our strong support for S. 414, the NTIA Digital Network Technology Program Act. I also want to thank the members of this subcommittee, in particular Senators Max Cleland, Conrad Burns, and Byron Dorgan, for your efforts on behalf of tribal colleges and all minority-serving institutions.

For this afternoon's hearing, I have organized my testimony in three parts: (1) brief history of the tribal college movement; (2) background on technology in Indian Country and strategies the tribal colleges have taken to bring new technological opportunities to our people; and (3) legislative recommendations for the subcommittee's consideration.

THE TRIBAL COLLEGE MOVEMENT:

In the mid-1990s, the Carnegie Foundation for the Advancement of Teaching dubbed American Indian Tribal Colleges and Universities "higher education's best kept secret." The title has stuck, for a number of reasons: We are small institutions, located in some of the most rural regions of this country. Turtle Mountain Community College, for example, is situated along the U.S.-Canada border in a beautiful wooded region that may have more lakes and geese than buildings and people.

Tribal colleges are young institutions—ranging from two to 33 years in age, but we are growing rapidly. Since the first tribal college was established on the Navajo reservation in 1968, we have grown to 32 institutions in the U.S., and our enrollments have increased by more than 1300 percent. Today, all seven tribes in Montana and all five tribes in North Dakota have colleges. Tribal colleges are also located in the southwest, the Great Lakes, and the upper Northwest. We are expanding in all regions, including Alaska.

In only a few decades, we have made a tremendous impact on Indian Country. For example, before 1976, when Salish Kootenai College (SKC) was established in Senator Burns' home State of Montana, less than 30 members of the Salish and Kootenai tribes had earned a college degree. Between 1976 and 1994, SKC graduated more than 400 tribal members. Today, Salish Kootenai College offers a number of bachelor's degree programs. Students around the world take SKC courses through its Internet-based international distance education programs.

According to one study, 75 percent of tribal college graduates are employed in the local community or go on to another institution of higher education. By comparison, American Indians who leave the reservation and enroll in mainstream colleges directly from high school have a failure rate of about 80 percent.

The typical tribal college student is:

- part-time, like the majority of community college students;
- an Indian woman;
- about 31 years old;
- single with young children; and
- often dependent on welfare or her extended family for support.

Many students are in need of basic remediation. And for many, the next nearest college is well over 100 miles away.

Because our colleges are located primarily on rural and remote Indian reservations, our student population is relatively small. Collectively, we serve more than 30,000 full- and part-time students. We offer a wide range of certificate, associate and bachelor degree programs, tailored to meet the needs of our local communities. Two tribal colleges offer graduate degrees. All of the tribal colleges are fully accredited—or candidates for accreditation—by national accrediting associations. All of the tribal colleges have articulation agreements with 4-year institutions to ensure a seamless transition for students interested in pursuing further degrees at other institutions.

In addition to offering general academic, basic, and remedial education programs, an important mission for each tribal college is to work closely with its tribe to plan for and develop reservation-based economies and create sustainable social and economic programs for our people. Several colleges operate “Tribal Business Information Centers,” local resources for business planning and entrepreneurship.

Over the past 30 years, tribal colleges have grown tremendously, yet we face serious challenges. We remain the most poorly funded institutions of higher education in this country:

(1) Tribal colleges are not State institutions, and consequently, we receive little or no State funding.

(2) Tribal governments, though supportive of the colleges, are underfunded themselves. These tribes are not the small handful of wealthy gaming tribes located near major urban areas. Rather, they are some of the poorest governments in the nation. In fact, three of the five poorest counties in America are home to tribal colleges.

(3) The Federal Government, despite its trust responsibility and treaty obligations, has, over the years, not considered funding of American Indian higher education a priority. For fiscal year 2003, the President’s budget proposes an appropriation of slightly more than one-half of the authorized amount, or about \$3,500 per full-time Indian student.

Through our consortium, AIHEC, we are working to address these challenges. AIHEC’s mission, in part, is to “*nurture, advocate, and protect American Indian history, culture, art, language, and the legal and human rights of American Indian people to their own sense of identity and heritage. . .*” These responsibilities are carried out in a number of ways, including through an exciting and extensive technology initiative.

BACKGROUND ON TECHNOLOGY IN INDIAN COUNTRY

We believe that technology will help TCUs overcome current inequities and could hold the key to our future success. To be sure, this country suffers a serious divide, and it is a division based on race, income, and location. But to tribal colleges, information technology represents a tremendous “digital opportunity.”

Today, information technology is an integral part of teaching, learning, and research in higher education. Every college in the Nation either has or is reassessing its role in light of the implications new technology brings for pedagogy and research. For tribal colleges and other minority-serving institutions—which are generally the nation’s poorest and most isolated institutions—the opportunities are nearly endless. We can—and must—participate in the development of strategies and technology solutions vital to ensuring that our students and communities are fully included in this nation’s prosperity.

Tribal colleges are determined to move forward, and we have made remarkable progress, but barriers still exist. Most of the colleges and our reservations lack basic infrastructure: reliable and high-speed Internet connections, adequate telephone service, appropriate numbers of credentialed personnel, and hardware and software that is taken for granted at most mainstream institutions. For example:

- Telephones: Less than 50 percent of homes on reservations have telephones, compared to 95 percent nationally;
- Computers: Less than 10 percent of American Indian households have computers, compared to about 50 percent of white Americans, 25.5 percent of Hispanics, and 23 percent of African Americans;

- Internet Access: No more than 8 percent of all American Indian homes have access to the Internet;
- Web sites: Only about one in five American Indian tribal governments have web sites (558 federally recognized tribes exist in the United States);
- TCU Connectivity: For adequate Internet-based data and information sharing, most universities require at least DS-3 connectivity. Only one tribal college currently has funding for high-band width connectivity, but it is not in place yet. All of the tribal colleges have some degree of T-1 access, although most have only fractional T-1 access.
- Trained Technicians: Tribal colleges struggle to hire and retain technicians. Annual starting salaries for faculty can be as low as \$21,000; consequently, technology staffs are paid at least two times below industry averages.
- Industry Partnerships: Tribal colleges have not yet established the kind of mutually beneficial relationships with key industries that lead to economic opportunity, relevant academic and training programs, and ultimately, prosperity.

Tribal colleges are determined to turn this situation around. A few years ago, we committed ourselves to an initiative aimed at bringing our institutions to a “*Circle of Prosperity*,” a place where tribal traditions and new technologies are woven together to build stronger and more sustainable communities.

First, we agreed collectively on two goals, which are the core of the *Circle of Prosperity* initiative. These goals are:

- (1) to enable each tribal college to improve its technology infrastructure in a manner that fulfills its mission and objectives related to the needs of its students and community; and
- (2) to develop tribally and culturally centered applications of information technology.

To develop the most cost-effective and locally relevant strategies for achieving the goals, the tribal colleges undertook a process never before attempted in Indian Country: we reached out to 11 major local, national, and international stakeholder groups and ask more than 150 representatives to help us develop, plan, and refine a process for bringing the opportunities of technology to Native America. To begin our work, the colleges used a methodology called a “Prosperity Game,” a fast-paced, interactive simulation developed by Sandia National Laboratory from strategic war games and designed to help create and sustain productive change through strategy development and negotiation. During the 3-day Prosperity Game, an outline of a plan emerged. Later, a smaller group came together for a 2-day “crafting circle” event, which helped refine strategies and action steps and laid the groundwork for the “National Framework for Tribal College Technology.”

To guide this important effort, AIHEC has established a national coordinating office and launched a series of activities representing the initial phase of the National TCU Technology Framework. These activities include strategic technology planning, partnership building, resource generation, policy development and development of pilot projects among tribal colleges, Federal, state, and tribal entities, and the private sector. Some ongoing activities, which are all part of the larger national effort to develop a national framework for TCU technology, include:

Distance Education: Through the Internet and other information technology applications, many tribal colleges are already enriching their curricula and supplementing limited learning resources. An expanding ability to network with other colleges, universities, and tribal institutions is enabling the colleges to share knowledge beyond reservation boundaries and bring to their communities technology and information that can be transferred to support community and economic development. For example, Bay Mills Community College, located in a refurbished fish plant in Michigan’s Upper Peninsula, is using technology and distance learning to deliver higher education to all 11 tribes in Michigan and to people in 17 other states, from Florida to Alaska.

Virtual Library: Through our virtual library initiative—a partnership including AIHEC, the University of Michigan’s School of Information, IBM, and the W.K. Kellogg Foundation—the tribal colleges have developed an Internet-based library designed to enhance the meager library resources traditionally available in Indian Country. (i.e. <http://www.bmcc.org/vlibrary/index.html>). The virtual library, which uses open source software, has been installed at more than 20 colleges. Over the next several months, all of the colleges should be on-line with locally controlled library web sites. These custom-tailored sites: (1) provide student and community access to local TCU library and curricula resources; and (2) interface with a much larger AIHEC virtual library data base of commonly available and licensed resources (i.e. national and international education journals)

Already, the virtual library has made a difference in the accreditation status of at least five tribal colleges. Last fall, the National Science Foundation awarded

AIHEC a planning grant to collaborate with NSF's National Science, Mathematics, Engineering, and Technology Education Digital Library community. This grant, like the Kellogg-funded project, will continue our partnership with the University of Michigan's Alliance for Community Technology (www.communitytechnology.org).

AN-MSI: Through a \$6 million 4-year grant from the National Science Foundation to EDUCAUSE, AIHEC is partnering with other MSIs and the extensive EDUCAUSE network on the "Advanced Networking with Minority-Serving Institutions" (AN-MSI) project. (See www.anmsi.org and attached articles, www.syllabus.com/syllabusmagazine/article.asp?ID=4574, and www.educause.edu/ir/library/pdf/erm0112.pdf). The project is designed to improve networking architecture, improve Internet connectivity in remote areas served by MSIs, help college presidents and administrators improve our knowledge of technology, assist colleges in strategic technology planning, and improve technical support through collaboration (i.e. remote technical support).

Through AN-MSI's limited funding, we have been able to achieve incredible results, largely because we have worked concertedly to develop a strong network of technical expertise within the tribal college system and because we leverage this funding to the maximum extent possible. A number of initiatives are currently underway, but I will mention only one—the wireless initiative—and refer you to the attached articles for information on other projects.

To provide high-speed connectivity to remote institutions and their satellite campuses, we are piloting state-of-the-art wide-band wireless technology at four tribal colleges, including Turtle Mountain Community College. Through this effort, the colleges will weave a wireless web of connectivity around our reservations, connecting institution sites, tribal offices, and K–12 schools to one another, and eventually, to the Internet through a highspeed backbone running between the college and existing Internet2 access points or State university systems. Our goals are to enable each TCU to acquire and sustain high-speed broadband connectivity, and then to build a TCU access grid that will weave a common web around all of the colleges and Indian Country. At the same time, we will be establishing collaborative relationships with people and institutions worldwide.

NSF-TCUP: In Fiscal Year 2001, the president and Congress created a new \$10 million program within the National Science Foundation to help tribal colleges develop and train an American Indian IT workforce and improve STEM programs. In the first year, 13 tribal colleges and two Alaska Native-Serving institutions received a mix of planning and implementation grants. We are currently in the second year of this program, with the expectation that a handful of institutions will receive funding later this year. We are very grateful for this significant new opportunity, and look forward to implementing and expanding it in the years to come.

A number of other initiatives are underway, including private sector partnerships with IBM, Microsoft, and CISCO; partnerships with Federal agencies such as NASA and DoD; and partnerships with other MSIs and mainstream institutions, including an initiative to develop a web-based Collaboratory for research and education.

Mr. Chairman, we are making progress, and we hope to work with you to ensure that our progress continues. We want to work with you to ensure that each and every tribal college has access to the resources it needs to develop and use technology in a manner consistent with its mission and tribal community. We would like you to join our effort to construct the national framework for TCU technology—to build partnerships, create resource opportunities, and build networks between tribal colleges and the private sector. In short, we would like to work together to ensure that all tribal colleges and tribal communities reach the Circle of Prosperity.

LEGISLATIVE RECOMMENDATIONS

Enactment and funding of the legislation proposed by Senator Cleland and his sponsors would help the tribal colleges turn our goals into reality. In our view, this legislation represents an investment—a down payment—that will pay education and economic dividends for generations to come.

A. National TCU Technology Framework Strategies:

The legislation appears fair and well reasoned, and we believe it is sufficiently broad to fit the 8-part strategy AIHEC is developing to achieve our goals for the national TCU technology framework. As outlined above, we have already begun working on some of the strategy's action steps, but I believe a summary of each strategy will give the subcommittee some issues to think about as the legislation is refined and modified.

Our strategies, which we hope will fit into the final legislative initiative, are:

- **Infrastructure:** Ensure that resources and relationships are in place to help develop and sustain appropriate technology-related infrastructure at each TCU, including connectivity, facilities, hardware, and software.
- **Leadership & Coordination:** Facilitate the development and continuous evaluation of individual TCU technology strategic plans; establish a national TCU technology advisory board; and develop policy and funding strategies.
- **Partnerships:** Build partnerships with industry, Federal agencies, other colleges and universities, K–12 schools, and communities to assist TCUs and their communities in improving their education systems, developing their economies, enriching and protecting their heritage, and improving quality of life.
- **Education & Human Resources:** Ensure that TCUs have capacity to evaluate and adopt emerging technology-mediated teaching tools and strategies; encourage development of on-line degree programs offered individually and through consortia; assist in creating faculty development programs to ensure that instructors are competent to teach and use emerging technologies; increase access to online curricular materials; create adjunct faculty resource pools that can be shared by all TCUs; and assist TCUs in implementing student assessment strategies.
- **Research & Development:** Enhance TCU research capabilities by encouraging linkages to national super-computing infrastructure initiatives (Access Grid); participating in Internet2; establishing local cluster computing projects; adopting low-cost Internet-based collaborative tools (Collaboratory); creating opportunities for research partnerships with non-TCU centers and laboratories and among TCUs; developing research projects targeting critical areas (i.e. health, environment, energy); and developing community-based technology transfer programs involving TCUs and industry.
- **Culture:** Establish an advisory group of cultural experts from TCU communities who will assist in developing culturally appropriate applications for the virtual library and other initiatives; and establish and strengthen linkages with other technology-based national and international indigenous initiatives, including development of ongoing projects with the National Museum of the American Indian.

B. Specific Recommendations

In addition to the broader strategy areas discussed above, we would like to briefly mention a few specific issues and ideas for your consideration:

1. *“Indians into Technology” Program:* In response to a critical need for medical professionals from and in Native communities in the mid-1970s, Congress authorized funding for an innovative educational program at the University of North Dakota-Grand Forks (<http://www.med.und.nodak.edu/depts/inmed/>). Through the “Indians Into Medicine” (INMED) program, American Indian students receive vitally needed educational and personal support from elementary through professional school. INMED includes summer sessions for students from elementary school through college; junior and senior high school bridge programs; a tribal college bridge program; summer medical school preparation program for college juniors and seniors and recent graduates; and ongoing educational and personal support programs for medical and graduate school students.

In recent years, INMED has expanded to other institutions of higher education in Indian Country. Because of similarities in demographics and need, a similar comprehensive education and support program could significantly impact efforts to develop and maintain an American Indian information technology workforce. We urge the Committee to consider establishing and funding an “Indians into Technology” program within the Departments of Commerce or Labor.

2. *Remote Technical Support:* Because the tribal colleges are small, underfunded and geographically remote, hiring, training, and retaining qualified information technology support staff is very difficult. We have very good people at our schools, but often, they need a little extra support and guidance. Targeted funding to encourage and sustain remote technical support, training cohort programs, and student-based IT technical support models such as the University of Wisconsin model could be very beneficial to all minority-serving institutions.

3. *Strategic IT Planning:* The need for ongoing strategic planning is paramount to any major initiative or institution. In this area, with technology rapidly evolving and new opportunities becoming available from all sectors, strategic planning for coordination and growth is essential. Specifically, planning needs to be focused on the unique nature and mission of institutions of higher education. Possible models include the AIHEC/AN-MSI partnership currently underway to provide technical assistance to NSF-TCUP grantees. Working closely with experts from the tribal college and MSI communities, AIHEC and AN-MSI are sponsoring teams that will visit colleges to: (1) document, assess, and, if necessary, help improve current networking architecture; (2) increase awareness of technology trends and issues among college

leadership and faculty; and (3) begin or expand the process of community-based IT strategic planning. Funding to expand this effort and ensure strategic IT planning, possibly through the Department of Education's Titles III and V programs for Institutional Development, or the National Science Foundation, could be a wise investment.

4. *Opportunity Parity*: An advantage to the breadth of S. 414's language is that tribal colleges and other MSIs can compete for funding regardless of where they are on the "technology spectrum." The language would appear to allow funding, regardless of whether the college is seeking basic connectivity or upgrading an existing system to build an access node. As new federally funded programs are developed, Congress should bear in mind the degree to which institutions vary and strive to make opportunities available to all. An institution should not be penalized because it currently lacks basic connectivity and e-mail service, but neither should an institution be excluded from participation because it made investments early, before dedicated funding existed, and now seeks upgrades or replacement for aging equipment. All programs must address this fundamental issue of "opportunity parity."

5. *E-rate Eligibility*: The federally created E-rate program has been tremendously successful in bringing affordable telephone and Internet services to the nation's K-12 schools. Just last month, the Bureau of Indian Affairs successfully completed connecting all of its schools to the Internet, and most, if not all, of these schools receive some level of E-rate funding. Currently, the program is not available to tribal colleges, despite the extensive work we do with our K-12 schools. We respectfully request that the Congress consider expanding the E-rate program to include tribal colleges.

Mr. Chairman, in closing I want to reiterate that the tribal colleges are committed to educating and training a new workforce, moving more people from welfare to work. We are committed to working with private industry to bring offshore jobs back home to the United States. We are committed to revitalizing our communities and America's economy through entrepreneurship. And we are committed to plowing any investment made by the Congress back into the education system in Indian Country, building a bridge of technological opportunity across our vast nation.

Thank you.

Senator CLELAND. Thank you very much, Dr. Monette. We appreciate you being here. Now I go to some questions here.

Mr. Gray, S. 414 specifically creates a new grant program which would have a designated funding stream to be used for the sole purpose of improving technology access and training in minority-serving institutions. There are those, however, who believe that we can make the best use of Federal dollars by consolidating technology programs into a single flexible State block grant program. Could you please compare the two approaches, block grant versus specific targeted grant program, in terms of effective use of Federal funds for technology programs?

Mr. GRAY. With the Federal block grant approach, what you are really doing is giving a large portion of money to States to make the decision at a State level on how to make the investments. Of course, that has some appeal because you can argue it is closer to the people and most State legislatures will be more responsive. But I think in terms of the UNCF experience that I would also ask my colleague, Dr. Humphries, who is head of NAFEO, to speak on this.

I think our past history has shown that the States have not always treated HBCUs equitably. I cannot speak for HSIs or for our tribal colleges, but historically the block grant approach from the States has not treated HBCUs equitably, and therefore that is why the Federal Government starting in the 1960s started targeting money and has continued to do so for minority-serving institutions such as HBCUs.

Senator CLELAND. Dr. Humphries, any comment on that?

Dr. HUMPHRIES. Yes, sir, I want to just tell you that I ditto my colleague's comment and to tell you that unequivocally the best

form of making sure that the digital divide issues are addressed via the funding of this bill is direct, targeted grants to the individual institution. And that enjoys my highest recommendation.

Senator CLELAND. Thank you.

Dr. Flores, any comment?

Dr. FLORES. On that question?

Senator CLELAND. Yes, sir.

Dr. FLORES. Yes, most definitely I endorse what my colleagues have expressed and it is simply the fact that when you disburse block grants to the States, obviously you are delegating authority and responsibility for the application of the funds within broad guidelines, and not always is it the case that those in greatest need will end up getting the support from those block grants.

In the case of responsive institutions, if you look around the country where we have the largest concentrations of these institutions, such as California or Texas, New Mexico and so forth, you will find that for the most part, Hispanic-serving institutions do not enjoy the type of support at the State level that other institutions receive, and that goes for just about everything that has to do with institutional capacity building. So my sense is that these institutions will be much better served if the funding goes directly to them as opposed to leaving it to the discretion of the States.

Senator CLELAND. Thank you.

Dr. Monette, any comment on that?

Dr. MONETTE. Thank you, Senator.

Briefly—of course, Indian people have this relationship with the Federal Government that was established through the treaty process, court decisions, legislation, Executive Orders, and the relationship with the Federal Government is recognized by the States and it is really difficult for us to get a fair share, I will say, of funding once it goes into the State in block grant form. So I would, of course, support the statements of the gentlemen on the panel and would elevate that a little bit because of the special relationship that Indian people have.

Senator CLELAND. Thank you all very much.

Mr. Gray, again we will start with you. S. 414 requires any eligible institution to provide a matching amount equal to one-fourth of the grant, or \$500,000, whichever is less; however, the match requirement is waived for any institution that has an endowment less than \$50 million.

I am told that there are only four HBCUs, two of which are UNCF member institutions, that would have to come up with match money. Do you believe the bill's match requirement would cause some hardship on these four institutions?

Mr. GRAY. I think that the match requirement can be a hurdle, and a difficult one for many of these institutions because of the nature of the institutions, the constituency that they serve, and the fact that they do not have access to outside resources from wealthy alumni.

Some HBCUs have experienced problems raising matching money for Federal programs. One that I would hold up for you an example is the Historic Preservation program of the Department of Interior that had a match as a component. Very well-meaning pro-

gram, but it meant that colleges had to go out and raise match money in order to save historic buildings.

I do believe, however, if you can keep the match—and if there needs to be a match, and I can understand the pressure for a match—if you can keep it a very low one, such as 25 percent, that might be acceptable. But once you start raising it to 50 percent and making it a large portion, I think it becomes very, very difficult. There are only four historically black colleges and universities that I know of, and I do not think any of the tribal colleges have endowments that would even trigger the matching requirement.

Senator CLELAND. Thank you.

Mr. GRAY. In most black colleges, the average endowment is somewhere around about \$20 million.

Senator CLELAND. Dr. Monette, the Technology Opportunities Program, or TOP program, is a very popular program. I am told that approximately 10 percent of TOP grants go to tribal communities. If the TOP program is eliminated, as President Bush has recommended in his fiscal year 2003 budget, what impact do you believe this would have on Native Americans' access to the information highway?

Dr. MONETTE. Thanks for the question. It is true that the TOPs program has been very helpful to Indian country. There is also a match requirement to that program, although they work well with Indian people that work around that and that is one of the better programs.

Some other Commerce Department grant programs require a match that we just cannot apply for, we cannot receive, also Department of Energy programs. But the TOPs program, you know, we get a little bit out in Indian Country and we see some hope and some opportunity there. And we start to develop the technical expertise to access that money and we get the infrastructure in place, and we get the people excited and get the community excited, and then they take it away.

So if that program is eliminated, then it is going to have a tremendous effect on that is going on in Indian Country today. And, you know, even this year the President, I believe, has cut the TOPs program, I do not know the amount, maybe \$12 million or something, and that is going to have an effect on Indian people. And I think, you know, we are at the tail end of this technology growth in the world, and we are just now beginning to reach a point where we can access some of these monies and I think, you know, if program like TOPs disappear, then it is going to have a tremendous impact.

Senator CLELAND. Thank you very much.

Dr. Flores, in testimony to the Congressional Web-Based Education Commission, the Hispanic Association of Colleges and Universities stated, and I quote: "Hispanic-serving institutions 'can make a significant impact upon the digital divide in the Hispanic community just like they are making upon the overall educational success of Hispanics. They have this special responsibility, but often do not have the funds to implement their Hispanic targeted programs.'"

Dr. Flores, how do you think a program like the one envisioned in S. 414 could actually help improve both the HSIs and the Hispanic community's access to technology?

Dr. FLORES. Sure. Obviously technology is a very high-cost item for minority-serving institutions. First the investment in expertise to do effective planning. Second, you need to also invest very heavily in hardware and software, all of the aspects that go with infrastructure. You, in addition, have to invest in faculty training and development; upgrading and maintenance come later. So all in all, all of this enterprise represents a major investment for an institution to do it right and because of the lack of the resources that well-endowed universities, large research institutions enjoy as compared to Hispanic-serving institutions and minority-serving institutions, quite frankly I believe this type of support will make a tremendous difference, for all the reasons I haven't expressed already in terms of our institution not having large endowments, not having wealthy alumni, not having all of those other things that go with acquiring more resources to include themselves in their capacity.

So I believe that this would really be helpful to minority-serving institutions for all of those reasons.

Senator CLELAND. Thank you very much, Dr. Flores.

It has been suggested that Senator Allen and I go back and forth and exchange questions here. So Senator Allen, it is your turn, sir, if you would like to take it.

Senator ALLEN. Thank you, Mr. Chairman. I want to thank each of these individuals for their outstanding testimony. In Virginia, one has a view of Virginia, and it is great to be here to listen to people from all over the country and recognize the richness and the diversity of challenges and opportunities we have all across our Nation.

Each of you made outstanding remarks. I was taking notes. It was very inspirational. Dr. Flores and Dr. Monette, Congressman Gray and Dr. Humphries, I guess I have got various questions to you all.

Let me follow up on Senator Cleland's question to you, Dr. Flores, because in listening to this, you were talking about endowments and whether it is an Hispanic institution or whether it is an historically black college, whether it is a tribal or an American Indian college, a lot of the endowments of universities are determined a great deal by the income of their graduates. And you will find that many, in listening to this, there are some colleges and universities in Virginia that are pretty new, some of them historically black, others, though, that are new and not historically black or American Indian or Hispanic, but nevertheless they are having the same sort of troubles because they do not have graduates who can contribute. A lot of it is the age of the university as well as the income.

Do you see, Dr. Flores, ways that the Federal Government can help foster, say, partnerships between HSIs and private companies and non-profit organizations? If you would share with us those.

Dr. FLORES. Most definitely. I think the opportunity is very clear, that corporate America I think has understood, perhaps more readily sometimes than institutions of government, the importance of

workforce development and workforce retraining and our high-technology-driven economy is requiring them to be even more on top of that matter. And therefore, they are much more willing to reach out. In fact, our association now has partnerships with a number of corporations, including IBM, to provide hardware and so forth and services to our institutions at a significantly reduced cost.

We are entertaining all the possible activities, including faculty development and the labs, internships for our students and graduates and a host of other things, so that the models that are already there, and I think with some encouragement from the Federal Government, more corporations will go even deeper into this possibility of partnering with institutions that need to prepare larger numbers of highly qualified employees for the new economy.

Non-profits, of course, are a very important part of our communities and they need to be part of the solution as well and be incorporated into partnerships of that kind.

Senator CLELAND. Senator Allen, I am told by staff that this bill actually authorizes and encourages partnerships between businesses, including minority businesses, to partner together for this kind of workforce development that you are very, very much interested in. So this bill allows and encourages partnership with the private sector.

Senator ALLEN. That is good, because I do find that very important if there are any encouragements in that regard and not just for minority businesses, but those that may be headed by—you know, very big business, CISCO, and John Chambers is from West Virginia and Georgia, and I think very much appreciates the importance of education. And in listening to Dr. Monette and you, Dr. Flores and others, what we are talking about, it is a question of income, it is a question of location, and some of this would fit in—now granted, they are not minority population, but in Southwest Virginia, in the coal fields or Appalachia, fit many of the same demographics, maybe not the same racial, but the income and location, same sort of challenges in some of the mountain areas of Appalachia that have an economy based so much on coal, and coal is not doing as well as it had been decades ago. So many face these challenges.

And then Dr. Monette talked about medical professionals. Same thing, rural areas, trying to ensure that primary care physicians and other medical professionals go into rural areas, and not just go into the suburbs or the city areas. These are challenges faced by many.

Dr. Humphries spoke on the H1-B visa waivers and so forth. And I felt the same way about that years ago. I have seen it all. And of course you are at Florida A&M. And as a young pup I remember Willy Galimore played for my father, and unfortunately died in a car wreck.

But while I was Governor, one of your sterling graduates, who I took away from a historically black university to make our Deputy Secretary of Education, Will Bryant, a great man, and my successor made him Secretary of Education. He was at Virginia Union, but a good Rattler graduate from Florida A&M.

At any rate, the H1-B visas for bringing in folks from other countries fits right into what Congressman Gray was saying. And that

is, we are bringing in people to this country, people who are technologically proficient to help our businesses. You look at a quarter to a third of our population, that for a variety of reasons are not being motivated and not as a bottom line getting a good education, so that they can seize those opportunities and those good jobs. And that is exactly what you said, Congressman Gray or Chairman Gray. This issue is one of the future of our society, the competitiveness of our civilization, as well as obviously the individual opportunities for these youngsters to seize these opportunities.

Now, do you see that there are any barriers, Dr. Humphries, to historically black colleges, universities, and private companies to work together? Are there any Federal barriers stopping you, or is it a question of coming up with new ways to invent it?

Dr. HUMPHRIES. There aren't any barriers except the extent or the degree to which the broad masses of universities and colleges that have to be worked with. So I see that corporate America certainly and private sector activities can work with historical black colleges and universities and partner. It is going to be difficult for them to partner with all 118 of our institutions in regard to that.

So if we are talking about a sphere of 20 institutions, over time I think all of them could be worked with. But time is not our friend. So I think that you would be asking corporate America a difficult proposition to say you have got to work with all of these institutions to bring them up to snuff, to help bring them up to snuff, along with our Federal program over the period of this bill, which is up to 2000—I think 7, that one was talking about in the bill.

And so I think every avenue ought to be used to help get us there, and that includes partnerships with corporate America. But I think that it is going to be difficult. It is going to be a difficult proposition to say you bring all 114 up to snuff in terms of this thing.

But certainly it is doable, it is desirable, and I think that they will. So I just think the numbers represent a challenge in going forward, but willingness and the lack, is just terribly—I think it is there, and companies will work with HBCUs to do that, and they will work very effectively to do it. But I think it is going to be a challenge for everyone to talk about 114 institutions—118 institutions being brought up to snuff over the course of time.

Senator ALLEN. Putting that together with your answer, and back to having to bring people in from other countries, and I think that the folks that have been brought in on H1-B visas have been very helpful and productive for our country. Obviously, with the technology sector in a recession right now there is not quite the same demand as there was a few years ago.

But nevertheless, when you think of it all, and I saw when we created a new engineering school at VCU in Richmond, in engineering there are so few women and so few minorities that are involved in some of these sciences to take advantage of these jobs. Now it is remarkable the number of minorities and women at VCU's School of Engineering. It is a new engineering school. It is only 4 years old or so, although in microelectronics it has the most advanced clean room for microelectronics, thanks to Motorola's grant of several million dollars.

Just to show how important this is, and I do not know the answer, maybe Congressman Gray could answer it. What percentage of students at historically black colleges and universities graduate with science, mathematics, or computer sciences degrees?

Mr. GRAY. In terms of the historically black college community and African Americans, the vast majority of African Americans who get a degree in engineering or science graduate from HBCUs to the tune of, for instance, if you take engineering alone in all of its forms——

Senator ALLEN. Right.

Mr. GRAY [continuing]. The top seven schools that produce engineers in America, six of them are historically black colleges. Only one is a majority institution, and that is Georgia Tech. And Georgia Tech is No. 1 not only because of its very unique recruitment program, but also because it has a combined program with Spellman College and Morehouse College, two of our schools.

But you have Florida A&M, you have Howard University, Tuskegee, North Carolina, Grambling, and Prairie View. Those seven schools graduate over 70 percent of African Americans who will get an engineering degree this year. And you will find that kind of pattern, HBCUs mixed with some majority institutions.

And when you say in terms of the total numbers, African Americans are probably, in terms of all engineers that are graduating this year, will probably be in the single digits, high single digits to low double digits of all of those, in terms of just African Americans. That is not sufficient.

You have two issues that you have to address. One is a pipeline issue, and that pipeline issue starts K through 12.

Senator ALLEN. Right.

Mr. GRAY. But it does not have to exist only there.

The other issue is an issue in higher education, and that is institutions developing, attracting minorities to their engineering and their science programs. Georgia Tech has done an unusual job. They were not even in the top ten 15 years ago. Now they are number one. And they have developed special recruiting, mentoring, etc.

And so you can turn those numbers around, but you have got to do it in two places, one, at the pipeline. But not just at the pipeline. You also have to change higher education in America, change engineering schools, change engineering professors who begin to believe, as Dr. Humphries used to teach at Florida A&M, that every kid who walks through our door, even though they may not have gone to the best math high school in a State, we can turn them into mathematicians, we can turn them into engineers. And guess what? In 4 years they do.

Dr. HUMPHRIES. Well, can I just comment on that? I want to correct Bill just a moment on who is number one. Black History, when they started reporting the degrees of engineering from the undergraduate schools, treated the Joint College of Engineering, Florida A&M and FSU as a single entity. And last year they separated us, although we're just one engineering school.

So if you look at our joint college, Florida A&M and Florida State, as one engineering school, we are the number one producer

of African American engineers last year. Florida A&M by itself was number three.

There were only 10 baccalaureate degrees separating Georgia Tech and Florida A&M, but when you added in the 25 African Americans who graduated from Florida State to the 143 that graduated from Florida A&M, you got 168, and we surpassed Georgia Tech. That one engineering school surpassed Georgia Tech's one engineering school by about 15 baccalaureate degrees. And we were rightfully number one, but Black History did not want to give us credit for that. So I just wanted to correct that for the record, sir, and let you know that.

And the second point I would like to make to you, which has to do with the thoughts you had about the HB-1 visa, the Joint College of Engineering was established in 1982. It moved from zero baccalaureate degrees, 20 years later to being number one in the Nation. So it is possible, if you have the capability to produce the programs, that you can, in fact, make a significant contribution to the under-represented areas in regard to that.

And just one piece of information for you. There are only about 19 historical black colleges that offer computer science programs, about 19 of the total. And so—

Senator ALLEN. Why?

Dr. HUMPHRIES. It is infrastructure and—

Senator ALLEN. I thought I knew the answer. I wanted your testimony.

Dr. HUMPHRIES. So if you would just expand this vibrant field, and everyone would take it with the resources to make it possible, it would increase the enrollment and would increase the technology person-power of the Nation going forward. So there has got to be a new emphasis on expanding the academic wherewithal of the historical black colleges in enabling programs that enable you to establish computer science programs, and so that is one answer.

And I would just like to give you one example of a partnership between a company and a university to address this shortage of technology, a serious problem with hiring people to work on their computer technology side of their company. So they made an interesting proposition to Florida Union. They said, "Look, we will pay for the faculty person, equip the laboratory, what we want you to do is teach four courses. And any student at your university, regardless of major, if they take those four courses, we will hire them in the computer part of our operation, and we will pay them starting salaries of \$42,000 a year. Doesn't matter whether you are a history major, an agriculture major, or a pharmacy major, or a nursing major. If they take these four courses and make a C average, we will hire them."

And so we went into a memorandum of understanding with them. They paid for the faculty. They set up the laboratory. They put the computers in there, and we taught the four courses. We went out and got the enrollment for those four courses. And they were geared toward 25 students in each one of those courses, but you had to take all four of them. And it is one of the most highly successful responses to the lack of technology-driven people in our Nation.

We did something precise, pinpointed it, and it solved the need for them, and that program continues until today providing serious people that are computer trained that can do the job in that company, and they make a very good salaries. They are a plus citizen in this Nation because of the industry pinpointing its needs, finding a partner, working together, getting it done, and doing it.

And I think that if we take this opportunity now, knowing that we are going to be even stronger in this as we go forward, if we take this opportunity now, foster those relationships, foster support from the Federal Government, we make a big dent in improving the quality of life for a lot of minority students, and we will get rid of some of this inequality in socioeconomic status in our country, along with getting rid of the technology and the digital divide proposition, too. And so these are worthwhile activities, and we need to pursue them.

Senator ALLEN. Thank you, Doctor.

Mr. GRAY. Let the record, Mr. Chairman, show that I stand corrected.

Senator ALLEN. Well, thank you for pointing out the company's visionary leadership. A lot of companies complain about, "Oh, we can't find the workers." That company actually went out and thought long term.

I am also glad to see that competition in the ACC, listening to Georgia Tech and Florida State with their sister university, Florida A&M, and this competition that is just as fierce in academics, and in fact it is more important than athletics.

Dr. HUMPHRIES. It is just that Florida State won in basketball.

Senator ALLEN. I am not going to get into—the Senator gets into a lot of non-germane areas. I will not get into it. I am an ACC fan, liking Mr. Jefferson's University the best. But regardless, when you are talking about the pipeline in K through 12, all of your testimony has been very, very good and very helpful to me. And I know all who will be reading the testimony, and obviously, I know Senator Cleland is pleased with such reinforcing statements.

I would also hope that you would be able to support the measure that Senator Boxer and I have introduced to encourage computer use, with refundable tax credits for the parents of children to get computers at home for their children, as well as Internet access, and peripherals, and other aspects of computers for their children, because it is important that early on children have that technological proficiency.

It is good for the technology sector, but it is education, and there are some software programs and so forth that are catered directly for what that particular child needs, and go at the speed of the child, which is also important in education.

So I want to thank each and every one of you all, Congressmen and doctors, for your testimony. And I relinquish the mike back to the Chairman.

Senator CLELAND. Thank you, Senator Allen, and thank you for your contributions today. Especially your questions have been insightful and we appreciate that very much. Panelists, thank you so much for being here, for traveling a far distance, and thank you for coming to be with us today. We will call our second panel.

If the hearing can come to order, we will proceed. We have two of our panelists today that have to catch a plane and we will be mindful of that. Our panelists today, Dr. Juliet García, President, University of Texas at Brownsville and Texas Southmost College; Dr. Marie V. McDemmond, President, Norfolk State University, in Norfolk, Virginia; Mr. George Sandoval, Network Administrator, Diné College, Tsalie, Arizona—thank you for coming all that way. And the Honorable Louis Sullivan, President, Morehouse School of Medicine; and Immediate Past President, Atlanta University Center Council of Presidents in Atlanta.

Dr. Sullivan, we will call upon you first for your testimony. And I know you have to catch a plane, and we will go right to the questions thereafter.

**STATEMENT OF HON. LOUIS W. SULLIVAN, MD., PRESIDENT,
MOREHOUSE SCHOOL OF MEDICINE; IMMEDIATE PAST
CHAIRMAN, ATLANTA UNIVERSITY CENTER COUNCIL OF
PRESIDENTS**

Dr. SULLIVAN. Thank you very much, Mr. Chairman, Mr. Allen. It is a pleasure to have this opportunity to appear before you, and I thank you for your introducing bill S. 414, the National Telecommunications and Information Administration Digital Network Technology Program Act. This is a measure that would provide funding for technology at minority-serving institutions.

I am President of the Morehouse School of Medicine and former U.S. Secretary of Health and Human Services from 1989 to 1993. I appear before you today as immediate past Chairman of the Council of Presidents of the Atlanta University Center.

The purpose of my testimony today is to discuss the technological advances made by the Atlanta University Center Schools, and to describe the need for funding for technology and telecommunications infrastructure, for networking, and for student access to computers.

Founded in 1929, the Atlanta University Center is the Nation's oldest and largest consortium of predominantly African American institutions of higher learning. Its six member institutions are Clark Atlanta University, the Interdenominational Theological Center, Morris Brown College, Morehouse College, Morehouse School of Medicine, and Spellman College. These institutions share a common mission of providing quality education for African Americans, and other students from diverse backgrounds. These students are our leaders for tomorrow—leaders in education, law, health care, engineering, government, and other areas.

Mr. Chairman, all six schools recognize the importance of staying abreast of rapidly evolving technology, and we are regularly applying new technology in our academic offerings, in our student living and learning environments on our respective campuses.

For example, in the year 2000, Morehouse College received a grant from the Department of Commerce, Economic Development Administration for renovating and expanding a technology tower complex which will be used, among other things, to address the shortage of educated and trained personnel in the telecommunications industry by providing job training and employment for stu-

dents and residents of the western community of Atlanta where we are located.

Spellman College has begun installation of a campus pipeline. This will provide a seamless integration of administrative services, campus Internet offerings, web-based e-mail, long-distance learning resources, and a virtual campus community.

Clark Atlanta University is applying technology to address increased student enrollment through networking and computer training. Clark Atlanta University's distance learning initiative allows students from across the country to take classes and participate in lectures using a two-way interactive telecommunications system.

Morris Brown College has implemented a technology assessment program which consists of six levels of computer and web-based training, allowing students to become proficient in web-based technology.

The Interdenominational Theological Center has received funding from the Lilly Endowment for its information technology for its theological teaching program. This program emphasizes faculty training for use of technology in the classroom.

This year my own institution will open its National Center for Primary Care. This center at Morehouse School of Medicine will be a key resource in using technology to determine how to expand access to high quality, cost-effective health care for under-served populations, and how to increase the proportion of under-represented minorities in the health professions.

Despite the lack of adequate funding for technological advancements at HBCUs, the Atlanta University Center Schools are making significant gains in closing the digital divide. With technology infrastructure and training in place, these schools will be able to develop network applications that can enhance teaching methods and educational resources, strengthen the quality of education, promote innovations, and increase their competitiveness.

The accomplishments of the AUC schools are illustrative of the steps that HBCUs are taking to close the digital divide. And while the actions described here show progress, there remains a great need for more technology at HBCUs. A digital divide exists between HBCUs and the Nation's majority institutions. This divide affects the ability of minority-serving institutions to be competitive with other institutions or higher learning.

Further, the limited financial resources of African American students makes it difficult for them to purchase their own computers. According to the U.S. Department of Commerce report released in 2000, historically black colleges and universities and assessment of networking and connectivity, this report shows that fewer than 25 percent of HBCU students own their own computers, and must rely on institutional resources to connect to the Internet, to World Wide Web, or to other networks.

This compares to 49 percent of students at other institutions of higher learning. This lack of modern available computer technology affects the ability of minority-serving institutions to be competitive with other institutions of higher learning. Access to resources for information technology is critical if HBCUs are to continue to pre-

pare students to take an active part and contribute to our country's economic growth and prosperity.

Senators Cleland, Hollings and Stevens have taken a significant step in narrowing the technology gap between HBCUs and majority institutions. We applaud them for introducing a measure that would authorize up to \$250 million to create a program to provide grants to minority-serving institutions for technology, infrastructure, and training. This legislation would provide funds for the acquisition of computers, technology, and other instrumentation and software; two, the acquisition of telecommunication systems hardware; and three, for training of students and faculty.

But this is just the beginning. Further studies should be conducted to provide a more detailed assessment of the extent of the digital divide, how it affects the ability of HBCUs to be competitive with other institutions of higher learning, and what steps should be taken to close this gap. Measures contained in S. 414 are vital to American higher education. So I encourage the Congress to pass this legislation. This measure will expand the information highway ensuring that no student is left behind in the use of technology in the 21st century, not left behind because of differences in income, education, and race.

Thank you, Mr. Chairman, for this opportunity to appear before you today. And I would be pleased to respond to any questions you may have.

[The prepared statement of Dr. Sullivan follows:]

PREPARED STATEMENT OF HON. LOUIS W. SULLIVAN, M.D., PRESIDENT,
MOREHOUSE SCHOOL OF MEDICINE; IMMEDIATE PAST CHAIRMAN,
ATLANTA UNIVERSITY CENTER COUNCIL OF PRESIDENTS

INTRODUCTION

Mr. Chairman and members of the subcommittee, thank you for the opportunity to express my views on S. 414 the "National Telecommunications and Information Administration (NTIA) Digital Network Technology Program Act" a measure that would provide funding for technology at minority-serving institutions.

I am Louis W. Sullivan, M.D., President of Morehouse School of Medicine and former U.S. Secretary of Health and Human Services. I appear before you today as immediate past President of the Council of Presidents of the Atlanta University Center (AUC). The purpose of my testimony today is to discuss the technological advances made by the AUC schools and to describe the need for funding for technology and telecommunications infrastructure, networking and student access to computers.

HISTORY OF ATLANTA UNIVERSITY CENTER

Founded in 1929, the AUC is the nation's oldest and largest consortium of predominantly African-American institutions of higher learning.

Its six member institutions—Clark Atlanta University, Interdenominational Theological Center, Morris Brown College, Morehouse College, Morehouse School of Medicine and Spellman College—share a common mission of providing quality education for African-Americans and other students from diverse backgrounds. These students are our leaders for tomorrow—in education, law, health care, engineering, government and other areas.

Mr. Chairman, all six schools recognize the importance of staying abreast of rapidly evolving technology and we are regularly applying new technology in our academic offerings, and our student living and learning environments on our respective campuses.

For example, in the year 2000, Morehouse College received a grant from the Department of Commerce, Economic Development Administration for renovating and expanding a Technology Tower Complex which will be used, among other things, to address the shortage of educated and trained personnel in the telecommunications

industry by providing job training and employment for students and residents of the West End community in Atlanta.

Spelman College has begun installation of a "Campus Pipeline", which will provide a seamless integration of administrative services, campus internet offerings, web-based e-mail, long-distance learning resources and a virtual campus community.

Clark Atlanta University is applying technology to address increased student enrollment through networking and computer training. Clark Atlanta University's "Distance Learning Initiative" allows students from across the country to take classes and participate in lectures using a two-way interactive communications system.

Morris Brown College has implemented a Technology Assessment Program, which consists of six levels of computer and Web-based training, allowing students to become proficient in Web-based technology.

The Interdenominational Theological Center has received funding from the Lilly Endowment for its Information Technology for the Theological Teaching Program. This program emphasizes faculty training for use of technology in the classroom.

This year, the National Center for Primary Care will open on the campus of Morehouse School of Medicine. This center will be a key resource in using technology to determine how to expand access to high quality, cost-effective healthcare for underserved populations, and how to increase the proportion of under-represented minorities in the health professions.

Despite the lack of adequate funding for technological advancements at HBCUs, AUC schools are making significant gains in closing the digital divide.

With technology infrastructure and training in place, these schools will be able to develop network applications that can enhance teaching methods and educational resources, strengthen the quality of education, promote innovations and increase competitiveness.

The accomplishments of the AUC schools are illustrative of the steps HBCUs are taking to close the digital divide. And while the actions described here show progress, there remains a high demand for more technology at HBCUs.

LACK OF TECHNOLOGY AT HBCUS

A digital divide exists between HBCUs and majority institutions. This divide affects the ability of minority-serving institutions to be competitive with other institutions of higher learning. Further, the limited financial resources of African-American students makes it difficult for them to purchase their own computers.

According to the U.S. Department of Commerce Report released in 2000, *Historically Black Colleges and Universities: An Assessment of Networking and Connectivity*, fewer than 25 percent of HBCU students own their own computers and must rely on institutional resources to connect to the Internet, World Wide Web or other networks. This compares to 49 percent of students at other institutions of higher learning.

This lack of modern, available computer technology affects the ability of minority-serving institutions to be competitive with other institutions of higher learning in the information age.

Access to resources for information technology is critical if HBCUs are to continue to prepare students to take an active part and contribute to the country's economic growth and prosperity.

PROPOSED RESPONSE

Senators Cleland, Hollings and Stevens have taken a significant step in narrowing the technology gap between HBCUs and majority institutions. We applaud them for introducing a measure that would authorize up to \$250 million to create a program to provide grants to minority-serving institutions for technology infrastructure and training.

Specifically, this legislation would provide funds for: (1) the acquisition of computers, technology, other instrumentation and software; (2) the acquisition of telecommunications systems hardware; and (3) training for students and faculty.

But this is just a beginning. Further studies should be conducted to provide a more detailed assessment of the extent of the digital divide, how it affects the ability of HBCUs to be competitive with other institutions of higher learning and what steps should be taken to close this gap.

CONCLUSION

Measures contained in S. 414 are vital to American Higher Education. I encourage the Congress to pass the "National Telecommunications and Information Administration Digital Network Program Act." This measure will expand the informa-

tion highway, ensuring that no student is left behind in the use of technology in the 21st century because of differences in income, education and race.

Mr. Chairman, thank you for this opportunity to testify today. I would be pleased to respond to any questions that you might have.

Senator CLELAND. Thank you, Dr. Sullivan.

I forgot to remind all of our panelists that we have a committee 5-minute rule, so if you could summarize your testimony in about 5 minutes, we are going to submit your full testimony for the record.

If there were no objection, Senator Allen, I would like to just ask the good doctor a couple of questions. He has another appointment, and no objection?

Senator ALLEN. Dr. Sullivan, you have a good, strong statement as far as I'm concerned. Thank you, sir.

Senator CLELAND. Dr. Sullivan, thank you very much.

The Administration's FY-2003 budget recommends eliminating several technology projects, including the Technology Opportunities Program, known as the TOP program, the Community Technology Centers Program, and programs to help teachers learn how to use computers in the classroom.

Just give us an indication of what impact you think the elimination of these initiatives would have on minorities and low-income communities?

Dr. SULLIVAN. I believe this would be an unfortunate circumstance, Mr. Chairman, not only on these institutions and the students they train, and the faculties, but frankly it would be unfortunate for the country as a whole, because what is intended with this legislation is not only to benefit these institutions, but also to see that their graduates contribute more effectively to the Nation's economy. With us competing more and more in this world economy, we need to be sure that all of our citizens are trained to the utmost so that each of our citizens can contribute the maximum to our Nation. So I think this would be really unfortunate if we were to discontinue these programs.

Senator CLELAND. Thank you very much. Dr. Sullivan, I am well aware of the quality of education provided by the six outstanding institutions which comprise the Atlanta University Center. In your testimony you touched on some of their technology achievements.

What do you see as the most pressing needs of these six institutions that you work with?

Dr. SULLIVAN. The most pressing need is to have the ability to expand our technological growth. Because we have shown and experienced thus far with the technology that we have developed, enhancing the productivity in our instruction, having students who are more competitive in the larger workforce, and therefore having the ability to improve not only their own lives but the lives of the communities in which they reside.

So clearly, funds to support the continued information technology capability in these institutions really is one of our top priorities.

Senator CLELAND. Thank you very much, and thank you for your service to our great Nation in so many wonderful capacities.

Senator Allen.

Senator ALLEN. I don't have any questions. Thank you for your compelling testimony.

Senator CLELAND. Thank you, Dr. Sullivan.

Dr. SULLIVAN. Thank you both very much, and I very much appreciate your understanding. And if I may be excused, I will leave my colleagues.

Senator CLELAND. You may indeed.

Dr. Juliet García is with us today, and she also has a plane to catch and we will go right to you, Dr. García.

**STATEMENT OF DR. JULIET V. GARCÍA, PRESIDENT,
UNIVERSITY OF TEXAS-BROWNSVILLE**

Dr. GARCÍA. I ask for your forgiveness ahead of time, Senator. Thank you for exiting the scene. Not to be rude, but a 5:30 flight to the southern tip of Texas is going to be my—

Senator ALLEN. Your flight is at 5:30?

Dr. GARCÍA. Yes, sir.

Senator ALLEN. Carry on.

Dr. GARCÍA. Here goes. Good afternoon, Mr. Chairman and Senator Allen. I am Juliet García, and I am President of The University of Texas at Brownsville in partnership with Texas Southmost College.

Let me begin by describing our university in partnership with the community college. It serves over 10,000 academic students right on the border. As a matter of fact, we are one block from Mexico. And 10,000, in addition, continuing education and workforce training students.

We offer everything from a certificate and associate's degree, which are community college traditional degrees, to baccalaureate and graduate degrees.

The partnership between University of Texas at Brownsville and Texas Southmost College combines then the strengths of a community college with those of an upper-level university by increasing student access and eliminating the traditional barriers that often exist for transfer between a community college and a university. We are called then a community university. We were an experiment, one that had a great deal of difficulty getting going, just because of accreditation issues. But after 10 years the experiment has been labeled and awarded a success, and we now have a 99-year contract to continue the experiment between the community college and The University of Texas at Brownsville.

Our population is unique in a variety of ways. I mentioned we are one block from the border. So many of our students are bilingual, bicultural, and we are hoping to in our training include biliteracy. That is, a student should be able to go to our university, obtain an MBA or an engineering degree, and be able to do that work in Monterey or in Chicago, or in some off-country site in South America or around the world. We did not create the world economy now that drives industry, but we are certainly meaning to take advantage of it.

We represent a region and a community that is 90 percent Hispanic with a median family income of \$15,000. So when we are talking about the poorest community, our community—excuse me—the poorest county in the State of Texas, often you hear about Hidalgo County, or Cameron County, or Starr County. It is not the

way you want to be in the news, but it is the way we are often cited because of negative poverty statistics.

So when I see the NTIA report that the Internet divide for Hispanic households was 4.3 percent wider in 2000 than it was in 1998, I understand that that disparity is even greater in a community like deep South Texas.

Let me give you an example. We are part of the University of Texas System. We are not Longhorns. And not only are we not Longhorns like U.T. Austin, but we are different in other ways. There are 15 components in the University of Texas System. The only two components that do not receive oil and gas revenue benefits are the two Hispanic-serving institutions, predominantly Hispanic-serving institutions, U.T. Pan American, also in South Texas, and U.T. Brownsville.

So let me give you an example of what that means for our students. Our library at UTB ranks among the bottom 10 percent of the libraries in the colleges in the State of Texas. This is not what you want to brag about as the president. In terms of books available per student, that means that if I were a student at U.T. Austin, I would have 146 books available to me, and only 17 books available at the Brownsville library.

But we see digital access as a greater leveler. We have begun to create and make available for our students a digital library. Let me give you an example of what we have done. In 5 years we have taken what was 500 print serials or access to serial publications, 500 in number, and expanded it to 32,000. That is in 5 years, and it is through digital access. These serials are available 24 hours a day, even though the library is closed. And unlike the ones in print and in the library, they are available to multiple users at one time, and they are never lost or at the bindery.

This works if you have access then to Internet and to computers. So the catch is now how do we make that accessible to all students? Well, of course we have computer labs, but never enough. Half of our library now looks like a computer lab, because students do not have laptops, and may not benefit, sir, from the tax credit, even though we would love for them to.

If you have \$15,000 income in a family, \$1,000 of that \$15,000 is probably not going to go to a new laptop, even though you are going to get a tax credit. OK, well, even so, it would be hard for me to spend one-fifteenth of my income. And I say that not because it is a bad idea, because certainly an incentive to provide technology for any family or for any student is exactly what we need. But if we believe that it is going to target some of these students, I am afraid that we may not be targeting the ones that, in fact, might need it the most.

So what we need to believe is that our computer labs are the only accessible computer for students, and if you do not have enough computers, right away we have cut back that access.

And second, if you can only keep your computer lab open for a certain amount of time, then students after hours, after work, and most of our students work, do not have access to computers either.

And I would like to respond to some of the issues that have been raised today, because we are supportive of this bill. That is, I am personally, and I believe that most HSIs, as Mr. Flores has also

testified, applaud the innovative, creative, and really far-reaching benefits of the bill that you have presented.

And so I applaud its flexibility, and I applaud the fact that it encourages partnerships with communities, with schools, with community-based or locally organized organizations, and certainly with private industry.

We have a Garrett grant. As a result of that Garrett grant, we have 7,000 students who are gearing up to come to our university. We would hope that when they get there they are not disappointed, that they actually would have better computers there than they have at their own schools, or they would have computers that often are not in the poorer schools.

I would like to respond to a couple of things that have been brought up earlier. One is a segment that tribal colleges are the best kept secret often left out of important studies. I have a different kind of analogy to make. Hispanics are never left out of studies. It is kind of hard to leave us out now that we are so many in the United States.

But what I see in people's faces when you talk about Hispanics is, "Oh my God, what are we going to do with all these Hispanics?" There is a real concern. I do not think people are worried about looking like Hispanics. I think what they are worried about is the characteristics that sometimes Hispanics have in the population: under-educated, employed at a much lower level, and certainly not as productive members of the society as we could be.

But imagine if we turned that around. Imagine if we said, "Thank goodness my State has a lot of Hispanics." The only way that would happen is if we took those Hispanics and trained them, and honed their skills, and gave them those opportunities. Not in affirmative action, but affirmative opportunity. If you want Hispanics to do well in Texas, or in Virginia, or in Georgia, or anywhere else, all they need is opportunity of the same kind, of equal measure to the kind the student does if he or she gets into U.T. Austin.

So I would applaud the recommendations that President Humphries made about Pell-eligible students being targeted to allow students to buy personal computers. If we can figure some way to do that, that would reach 75 percent of the students at this one HSI.

I also would point out that one of the reasons students go away from school, get out of school, regardless of how valuable working for Sears appears to be this year—and I refer not in a negative way—but simply when that student exits school without a degree, because they are offered a \$42,000 paying job, think about it. The family is getting \$15,000 a year. All of a sudden, I can make \$42,000. You are not going to get the college degree. You are going to get four computer courses, which is fine to get you in the job market. But when technology-driven industry then for some reason has to cut workers, the first ones going to go are the ones without full-fledged baccalaureate degrees.

We have the same problem in our institution where we start students in computer instruction, computer information systems, and they are offered a high-paying job immediately. And they end up

without a degree, and find themselves out of a job 2 or 3 years from now.

So my proposition is simply help us keep them in. Help us create those partnerships with Sears and others, but as incentives not to quit working at school while they begin working at Sears, a partnership that is as concurrent with your involvement at the university, that will lead you to a baccalaureate or a master's degree.

We will provide you an internship at Sears. They have to work anyway; most students at HBCUs and at HSIs have to work. So help us find through partnerships ways to provide them the money they need to work, and at the same time to continue their education.

Two more points. One, about the number of computer engineering graduates. I am not going to get into the Florida fight, but I do want to provide you with an analogy of Hispanic-serving institutions and ours is in mathematics.

We are only 10 years old, yet in the Hispanic Outlook for Higher Education we were cited as the institution last year that produced the most Hispanic mathematics majors in the Nation. And you can say "That's a wonderful job. You're doing great," but I have to say, "Then what is everybody else doing?" If I am able to do so well with only a 10-year-old institution, with only 10,000 academic students, what is everyone else—why are Hispanics not educated in mathematics at other institutions? My point there is that we have got a long, long way to go, and targeting HSIs and HBCUs and tribal colleges I believe is the right direction to take.

And finally, and it has to do with potential for human capital. I mentioned the view of what folks think about Hispanics today. I offer you another view in addition to the one I have already mentioned, and that is of a phenomenon that has occurred in our community in Brownsville, and that is of chess.

There is an infection that has occurred. Children starting out at 5 years old are playing chess and winning State and national tournaments. Of the five cities in the Nation that were most represented at the National Chess Tournament, Brownsville, Texas was one of those five.

Those children were the ones that were at risk. They came learning English for the first time at 5 years old. Their parents had not gone to college; they had not gone to high school—graduated. They were on free lunch, and we can go through all the negative criteria.

My point is that they had an opportunity. Somebody sat down with them and said, "I am going to teach you how to play chess." And they had tremendous potential now to learn it. They already knew two languages. One more is chess. A third one is math. A fourth one is computer science. Once your brain gets complicated, having learned two languages, it can learn a third and fourth.

My point simply is we have the same opportunity in Brownsville, or other HSIs or HBCUs, we can produce the same kind of product as any other institution. I thank you for your time, and I am sorry I talked in compressed paragraphs.

[The prepared statement of Dr. García follows:]

PREPARED STATEMENT OF DR. JULIET V. GARCÍA, PRESIDENT,
UNIVERSITY OF TEXAS-BROWNSVILLE

Good afternoon, Mr. Chairman and members of the Subcommittee on Science, Technology and Space of the Senate Committee on Commerce, Science, and Transportation.

I am Juliet García, President of the University of Texas-Brownsville. I am pleased to testify today at this hearing on the Digital Divide, its effect on Minority-serving Institutions and the Digital Network Technology Program Act.

Let me begin by describing our University. In partnership with Texas Southmost College, our University serves over 10,000 students at its campus located in Brownsville, one block from Mexico. We offer a wide range of courses from certificate, associate, baccalaureate, and graduate degrees as well as a growing workforce training and continuing education program. Our mission at UTB/TSC is to provide accessible and affordable postsecondary education of high quality, to conduct research which expands knowledge and to present programs of continuing education, public service, and cultural value to meet the needs of the community. The partnership between the University and Texas Southmost College combines the strengths of the community college and those of an upper-level university by increasing student access and eliminating inter-institutional barriers while fulfilling the distinctive responsibilities of each type of institution.

At UTB/TSC, we place excellence in learning and teaching at the core of our commitments. We seek to help students at all levels develop the skills of critical thinking, quantitative analysis, effective communications, and technology that will sustain lifelong learning. On a daily basis, we serve students who are in great need of remedial work in core areas and students who are promising research scientists with bilingual abilities.

UTB/TSC fosters an appreciation of the unique heritage of the Lower Rio Grande Valley, and provides academic leadership to the intellectual, cultural, social and economic life of the bi-national urban region it serves. That region is over 90 percent Hispanic with an annual median family income of about \$15,000 and an unemployment rate that approaches twice the national average.

When I see in the National Telecommunications and Information Administration's report that the Internet divide for Hispanic households was 4.3 percent wider in 2000 than in 1998, I know that the Brownsville Community also faces this increasing divide.

The library at UTB/TSC, in terms of books available per student, ranks among the bottom 10 percent of the colleges in the State of Texas. This means that at the University of Texas at Austin there are 146 books per student as compared to 17 books per student at UTB/TSC. Digital access is a great leveler. We have begun to create and make available to our students a digital library. Our director of library services says that what would take a decade to build in a traditional print library can be done in 2 years with online access. Collections that at one time were available only to the wealthy schools are now available to smaller institutions through the Internet.

These examples are provided because what is true for UTB/TSC students is reflective of our region.

At UTB/TSC, we are fully aware of the singular importance of the Digital Divide and its far reaching effects on low-income and minority youth. We also fully embrace the imperative of better integrating technology into the classroom, curriculum, school administration, and community to improve student achievement through the development of 21st century skills. And, we understand that one of the most effective ways to foster integration of technology into education at all levels is through well-designed partnerships that cut across the divisions that too often separate K-12 schools from colleges and universities and too often disconnect government from its community and its citizens.

In today's knowledge-based society and economy, students require 21st century skills. More than ever before, today's students must be able to find, analyze, synthesize, and apply information quickly and efficiently. In conjunction with the development of strong reading, writing, and mathematical skills, better integration of technology into the classroom can improve both teaching and learning, making both more student-centered and productive. Anyone who has witnessed, in the classroom setting, the introduction of low-income and minority students to the personal computer and wonders of the Internet can attest to how such an experience can instantaneously propel their interest, motivation, critical thinking, and expression. As a nation, our goal surely ought to be to make that mind-expanding experience available to all students as early in their educational development as possible. Access

to technology in education—and all the benefits that flow from it—cannot be left to depend on one's income or race. It must be guaranteed for all youth.

To fully integrate technology into our educational system and reap the benefits of enhanced student achievement and development of 21st century skills, requires a broad approach that encourages all of the key players—administrators, parents, community, and government—to integrate technology into the way we do business. Only when school administrators use technology to manage education efficiently, only when parents are informed about technology and are fully supportive of its key role in the education of their children, and only when the entire community becomes fully involved through creative partnerships that foster the development and sharing of technology resources can the benefits of technology to students in the classroom be maximized and made available to all students, regardless of income or race.

Let me give you a recent example, in late January and early February, we had more than 10,000 fifth through eighth grade students come to our campus to participate in the live interactive viewing of scientists at work in Alaska through the JASON PROJECT, a science based program started by Dr. Robert Ballard. Our students used the Internet to submit questions to the Alaska and to complete answers to questions submitted by the scientists. One of our own students from San Benito High School, served as host with Dr. Ballard. This young lady, Christian Gonzalez, from the Lower Rio Grande Valley who had never even seen real snow, who had never even imagined being on a live telecast, much less being in Alaska with a world renowned scientist, had a tremendous experience because technology had been used to introduce her to the possibilities in junior high school through the JASON project.

As a nation, our goal surely ought to be to make that kind of mind-expanding experience available to all students as early in their educational development as possible. Access to technology in education—and all the benefits that flow from it—cannot be left to depend on one's income or race or happenstance of where there were born and reared. It must be guaranteed for all youth.

In that regard, I applaud S. 414 for taking a broad approach to fostering integration of technology in education through creation of a flexible digital technology program. Under the proposed program, a wide range of colleges and universities that serve low-income black, Hispanic, and native American students can apply for a grant, contract or cooperative agreement to support a wide range of activities that can be designed to address the specific needs of their constituency, including:

- teaching students and teachers about technology in the classroom;
- creating and providing faculty development programs and prepare students or faculty seeking a degree or certificate;
- providing teacher education, library and media specialist training, and pre-school and teacher aid certification to enhance technology skills in the classroom or the instructional process;
- implementing a joint project to provide technology education in the classroom; and
- providing leadership development to administrators, board members, and faculty.

Each of these activities is a critical piece of a broad, comprehensive strategy to fully integrate technology into education and ensure that access to such education is ensured for all low-income, minority students.

I would also like to applaud the flexibility of the proposed grants—permitting as they would a breadth of capacity building expenditures: on acquisition of equipment, instrumentation, networking capability, hardware and software, digital network technology, and infrastructure.

Finally, I applaud the bill's encouragement of the formation of partnerships between colleges and universities and State and local education agencies, community-based organizations, national non-profit organizations, and businesses, including minority businesses. The Advisory Committee on Student Financial Assistance, a congressional chartered panel on which I serve as Chairperson, has recommended the expansion of partnerships to ensure that low-income students who currently cannot afford college have access to high quality higher education and a baccalaureate degree.

UTB/TSC has broad experience with partnerships and we have witnessed firsthand the power of such partnerships. Our GEAR UP grant from the U.S. Department of Education has enabled us to partner with local schools to ensure that students learn about the possibility of higher education as early as middle school and graduate from high school academically prepared to enroll in college. Over 7,000 Brownsville area students are participating in the GEAR UP program. In addition, a foundation grant has enabled us to create the ENLACE program in which we partner with schools and community groups to enhance the teaching of science and

support community activities that help students and parents understand and enjoy science.

I believe the proposed program, supporting varied and far-reaching activities through partnerships would help minority-serving institutions make great progress in closing the Digital Divide for the benefit of the students they serve as well as the entire nation.

Senator CLELAND. Dr. García, that is a powerful statement and a compelling analogy there. Thank you very much. I have no further questions.

Does Senator Allen have any questions?

Senator ALLEN. No. Muchas gracias and bon voyage.

Another language in there.

[Laughter.]

You are supposed to get there supposedly, I will say, 2 hours before the plane leaves. Are you flying out of Reagan National?

Dr. GARCÍA. Yes, sir.

Senator ALLEN. Well, that is good.

[Laughter.]

Senator CLELAND. Thank you very much, Dr. García, for coming to be with us. God bless you.

Dr. McDemmond, we welcome you to our hearing.

**STATEMENT OF DR. MARIE V. McDEMMOND, PRESIDENT,
NORFOLK STATE UNIVERSITY**

Dr. McDEMMOND. Well, good afternoon, Senator Cleland and Senator Allen, who was Governor of our great Commonwealth of Virginia. You really set an example of how to govern in the Internet age. So we want to thank you for that.

My name is Marie McDemmond, and I am President of Norfolk State University, a comprehensive public institution in Norfolk, Virginia, and the largest of the five historically black colleges and universities in the Commonwealth of Virginia with 7,000 students. I am also proud to serve as a member of President Bush's National Advisory Board on Historically Black Colleges and Universities.

Since Norfolk State University opened its doors in 1935, the university has remained steadfast in its commitment to provide an affordable, high-quality education to an under-served population in its community, the State, and the Nation. Norfolk State's need-based students, 88 percent of our population are on some form of financial aid, have an average median family income of slightly less than \$23,000 a year. We have worked hard to ensure that our students remain eligible for Federal financial aid, and with improved management over my 5 years have lowered our default rate from 27 percent to 5.7 percent.

I am here today to speak in support of S. 414. This legislation would provide a new grant program for minority serving institutions across the country to help bridge the current inequities in computer and Internet access that is between those with different levels of income and education in this country, is greatly needed.

This bill is needed for minority-serving institutions, because in time of prosperity, initiatives for equipment upgrades, training, and innovations and renovations at MSIs get only partial funding at best. And when revenues dwindle, like now, so do the scarce resources of capital improvement funds for equipment and infrastructure.

Norfolk State University currently serves a unique mission in educating a significant number of African American professionals in the sciences and in technology. In the last decade Norfolk State has increased the number of students enrolled in its fully accredited computer science program by 116 percent, and increased its numbers of students enrolled in computer technology by 32 percent.

Norfolk State was one of the first universities in Virginia to offer to students in the non-technical field the Internet-based texts and exams in our own computer laboratories on campus.

In our current efforts to bridge the digital divide here in the "Digital Dominion," Norfolk State University is attracting new businesses to the surrounding community so that they can take advantage of our location in an Enterprise Community, Empowerment Zone, Hub Zone and Hope VI community, truly a real deprived area within Norfolk, Virginia.

We are also providing, as Senator Allen mentioned earlier, certification to CISCO Systems and their technologies through our CISCO-sponsored lab on campus, and we are partnering with the Small Business Administration and Empowerment 2010 in our fully accredited School of Business's Center for Entrepreneurship, the ability for minority-owned businesses to absorb new technologies and the new knowhows in managing efficiently their businesses.

Over the next three to 5 years, through a public-private partnership, Norfolk State will lead an ambitious effort, a very aggressive effort to construct a telecommunications infrastructure. The Research and Innovation to Support Empowerment, or what we're calling our "RISE" Center, will support a complex technology development system within a bridging format with broad-band framework. RISE will be a self-sustaining facility that will promote technology, computer services to K through 12 schools, economic development, business formation, research opportunities, and work force development.

With sufficient funding, this center could have its own gigapod, could have Internet 2 access, and could really serve as a network among other HSIs, and particularly HBCUs and their respective communities, and aggregate their economic potential to deal with partnerships and expand minority training in the management of technology infrastructure.

You know, the majority of workers in the United States today are skilled knowledge workers. Our most important businesses and industries are not just computer and electronic firms, but also advanced information-driven companies with an educated and diverse work force. A work force of people who prize their differences, and will succeed because of them.

We must educate America's own for these great opportunities. Much of the recent growth in higher education has been and will continue to be among historically under-represented populations, racial and ethnic minorities, and first-generation college students who bring a number of unique academic and co-curricular needs to our campuses.

We need the resources to prepare these students for the jobs of the future. The bill you are considering to establish a \$250 million pool of funds through the National Telecommunications and Infor-

mation Administration's Digital Network Technology Program Act will fill the gap—will not fill the gap in this access, but it is a definite step in the right direction. This fund is an incentive for minority-serving institutions to find efficient and effective ways to educate our technology-proficient students.

As the President of a historically black university, I want to ensure you that the students we are preparing today are indeed achieving with excellence, and that each one must have the opportunity that he or she can be the very best they can be.

I want to thank you for your thoughtful consideration of this legislation. The education of our next generation of leaders has to be a team effort, and you, this Congress, are an integral part of that team. Thank you.

[The prepared statement of Dr. McDemmond follows:]

PREPARED STATEMENT OF DR. MARIE V. MCDEMMOND, PRESIDENT,
NORFOLK STATE UNIVERSITY

Good afternoon, Mr. Chairman, distinguished members of the Senate Subcommittee on Science, Technology and Space and other honorable members of the U.S. Congress. My name is Marie V. McDemmond. I am the President of Norfolk State University, a comprehensive public institution of higher education in Norfolk, Virginia, and the largest of the five Virginia historically black colleges and universities (HBCUs) with 7000 students.

Since Norfolk State University opened its doors in 1935, the university has remained steadfast in its commitment to provide an affordable, high-quality education to an under-served population in its community, its State and the nation. The percentage of undergraduate students receiving financial aid at Norfolk State University is 88 percent. These students have an average median family household income of less than \$23,000. Since my arrival at Norfolk State in mid-1997, we have worked hard to ensure that our students remain eligible for Federal financial aid and, with improved management, have lowered our direct student loan default rate in 5 years from 27 percent to 5.7 percent. For the last 65 years, NSU has made every effort to provide educational access to its culturally diverse and economically disadvantaged student population without placing unrealistic financial requirements upon them.

We all know that access to computers and the Internet and the ability to use effectively these new technologies are becoming increasingly important for full participation in America's economic, political and social arenas. In recent years, even though nationwide access to new technology has exploded, there is still overwhelming evidence of an ever increasing Digital divide—a compelling gap between those individuals and communities that have access to these tools and the training to use them, and those who do not.

I am here today to speak in support of legislation (S. 414), patroned by Senator Max Cleland. This bill represents an investment in America's most precious resource, its people. This bill would provide a new, and badly needed, grant program for minority-serving institutions across the country and would help eliminate the current inequities in computer and Internet access that exist between those with different levels of income and education. In October of 2000, the National Telecommunications and Information Administration produced a report called "An Assessment of Networking and Connectivity at Historically Black Colleges and Universities" for the U.S. Department of Commerce, and, as you know, that report drew everyone's attention to the immediacy of the access problem in lower socio-economic communities and at historically black colleges and universities. Figures released in the last year by Access Worldwide Communications indicate that

- Households with incomes of \$75,000 and higher are more than 20 times more likely to have access to the Internet than those at the lowest income levels.
- African American and Hispanic households are approximately one-third less likely to have home Internet access as other households.
- About one-third of the U.S. population uses the Internet at home, while only 16.1 percent of Hispanics and 18.9 percent of African Americans have Internet access at home.
- Although an increasing number of African American and Hispanic users are participating online, the overall divide is increasing as Internet utilization among the general population has also rapidly increased.

Over the last several decades the financing of public higher education in the United States has been one of uncertainty. When it was good it was very good and when it was bad, negligible funds were available. In the case of minority-serving public institutions, our portion of the pie has never been quite enough. The funding needed at minority-serving institutions just to put the infrastructure in place to accommodate the new and emerging technologies is enormous. Investment in infrastructure is only the first step. Investment will also need to be made to sustain as well as to renew and refresh the technology necessary for a competitive education. And of course without the technology infrastructure and equipment, there is no means to train. Minority-serving institutions must play catch up, but they continue to fall further behind as new technologies are being developed faster than the speed of light.

Minority-serving colleges and universities across the country are searching for funding and support from private sources that will compliment the dwindling funding available at the State and Federal levels of government. Most minority-serving institutions are just emerging as comprehensive colleges and universities, and Norfolk State is no exception. We do not have the same amount of private foundation resources or endowments as the larger, more established, traditionally white institutions (TWIs). We are working diligently to increase our endowments and increase our community and alumni support, but we still have a long way to go.

Norfolk State University currently serves a unique mission in educating a significant number of African-American professionals in the sciences and in technology. Within the last decade, Norfolk State University has increased the number of students enrolled in its computer science programs by 116 percent (from 197 to 425) and increased the number of students enrolled in computer technology by 32 percent.

Norfolk State University was one of the first universities to offer its students in non-technical fields the Virginia Internet-based Tek.Xam technology assessment exam proctored in its on-campus computer laboratories. In recent years, the number of student computers in campus labs at NSU has jumped from 600 to over 1,400 and all students have e-mail accounts. Every full-time faculty member has a desk-top computer and Internet access.

In conjunction with the over 100 firms associated with the Virginia High Tech Partnership, Norfolk State is significantly increasing the number of minority interns and permanent hires in technology related fields of employment, having placed over 60 students in technology internships over the past three summers.

In our current efforts to bridge the digital divide Norfolk State University is:

- Working to restructure about 30 businesses to prepare them for the 21st century business model;
- Providing certifications in CISCO systems technologies;
- Partnering with the Small Business Administration and Empowerment 2010 to strengthen the business community's capacity to absorb new technology and know-how; and
- Attracting new businesses to the surrounding community and formulating plans to capture the economic benefits of our location in an Enterprise Community, Empowerment Zone, HUB Zone and Hope VI Community.

Norfolk State University must act as a catalyst to make sure the technology infrastructure is in place not only for its faculty and students but also for its surrounding community. Over the next two to 5 years, through a public-private partnership, Norfolk State University will lead a large scale effort to construct a telecommunications infrastructure—The Research and Innovation to Support Empowerment (RISE) Center—that will support a complex technology development system within a bridging framework. RISE will be a self-sustaining facility that will act to spur economic development in the Enterprise Zone, Empowerment Zone, HUB Zone area surrounding the campus and will promote technology development, business formation, educational and research opportunities and workforce development. In the second and third phases of development, the RISE project includes a Science and Math Laboratory School for students K-6 and classrooms for distance learning programs. The private sector indicates that the RISE Center can create a network among several HBCUs and their respective communities and aggregate the economic potential emerging from expanded bandwidth and access. The facility has the potential to increase business partnerships and expand minority training in the management of technology infrastructure.

In Virginia, our former Governor, James Gilmore, and his predecessor, Governor George Allen, who I am happy to say is a former chair and now a member of this Senate subcommittee, established a model in the State for governing in the Internet age. Virginia has the first Secretary of Technology in the nation, the first Internet policy and was the first State to sign the Uniform Computer Information Trans-

action Act. Last year, a Commonwealth Technology Research Fund was created to help enable colleges and universities to better compete for Federal and private research grants. As part of the Hampton Roads Partnership, we see our city and the Hampton Roads region accommodating the expansion of high technology businesses from Northern Virginia and elsewhere. The vision is in place, but funding will remain a critical issue if we are to train and educate the workforce needed in this decade and beyond. We are confident with his experience in the technology field, our current Governor of Virginia, Mark Warner, will continue these efforts.

Many people think the world they know will last at least throughout their lifetime, if not forever. They believe that today's monumental changes somehow will not affect them and that the future will continue as the present. If you have lived in poverty and without much hope, it has to be paramount in your mind that there is truly a way out, a way to a better more productive life, and a way to use the brainpower you know you have. What the minority communities need to believe is that:

- Their preschool children will have safe daycare where computers offer the same exploration to these 1 to 4 year olds as to their middle and upper class counterparts;
- Their elementary school youngsters can surf the web to complete homework assignments and explore the challenging thoughts that present themselves while on line;
- Their traditional age students, or older, in colleges and universities know how to use all of the search engines and research programs available on campus, regardless of the amount of their tuition or the size of the institution's endowments; and
- Their senior citizens, often homebound, and others in their communities who are physically challenged, have computer skills and access to order their groceries, expand their minds or e-mail their children and grandchildren, no matter what their socioeconomic status or zip code.

Minorities are a vital part of the first generation of a new and glorious millennium of growth and development for our country—a country that needs our full participation. Minority-serving institutions have a unique challenge in educating students with little or no preparation for the work world they are about to enter. Many of the simplest of tasks we take for granted in the workplace today (making a phone call or sending a fax) are the by-products of years and years of educational and cultural development. Each new generation has learned how to accomplish these tasks, adapted their skills and made their processes better and better. Today we are reorganizing and rebuilding business and industry and even whole national economies, and in that process we are also redistributing knowledge and the way we communicate knowledge. There is a high demand in the United States today for skilled, knowledgeable workers. Our most important businesses and industries are not just computer and electronics firms, but also advanced, information-driven companies with an educated and diverse workforce, a workforce of people who prize their diversity and will be successful because of it. There is a national shortage of information and communication technology professionals, and as minority-serving institutions we can educate our own to fill this gap. It is critical that our government takes an active role in the installation, development and use of information and communication technologies across economic as well as geographic lines so that America will have its own diverse trained workforce.

Over the course of our nation's history, the view of higher education as a central element of our economic and social well-being has been widely acknowledged. Thomas Jefferson wrote of this concept when he said, "I think by far the most important bill in our whole code is that for the diffusion of knowledge among the people. No other sure foundation can be devised for the preservation of freedom and happiness." Jefferson's world, two hundred years ago, was a vastly different place than the world today. However, our increasing dependence on knowledge and information today continues to recognize the importance of Mr. Jefferson's words and acknowledges the importance of colleges and universities as the generators of that knowledge and information.

For more than two decades, enrollment at public colleges and universities has gradually risen; more than 77 percent of higher education is provided in public colleges and universities today. Projections for the coming decade show the total climbing further. Much of the recent growth has been among historically under-served and under-represented populations—racial and ethnic minorities, first generation college students—who bring a number of unique academic and co-curricular needs to our campuses. We must educate America's own to fill the high tech jobs of this century. The future demands that we have the technological resources to prepare these students.

The Senate bill you are considering in this subcommittee to establish a \$250 million pool of funds through the National Telecommunications and Information Ad-

ministration Digital Network Technology Program Act will not fill the total gap in technology access between the haves and the have-nots, but it is a critical step in the right direction. This fund is an investment and an incentive for us all in providing digital opportunities for the communities and the students we serve.

As the president of a public institution of higher learning and a historically black university, I want to ensure that the students we serve are "achieving with Excellence" and that each one has the opportunity to be the best he or she can possibly be. We must transform the digital divide that challenges us today into the digital resources and opportunities of tomorrow for all Americans regardless of their heritage or socio-economic status.

I want to thank you for your thoughtful consideration of this legislation. The education of our next generation of leaders must be a team effort, and you are a critical part of that team.

Senator CLELAND. Thank you, Doctor. I want you to know I picked up that phrase, "Digital Dominion." I got that.

Senator ALLEN, would you like to lead the questioning?

Senator ALLEN. Digital or Silicon Dominion. Dr. McDemmond came in at Norfolk State University and faced a lot of challenges when she came in. It was right at the end of my administration. I have a great deal of confidence in her ability to turn a lot of financial problems around. And it was no small task with the student loan default rate, and everything else that she has done at Norfolk State has just been fantastic.

I also asked this question of the previous panel, as far as the number of students, and percentage of students in computer sciences, mathematics, and computer technology. Your record at Norfolk State, the Norfolk State story about increasing the computer sciences programs by 116 percent, and the number of students enrolled in computer technology increased by 32 percent, I think was your testimony.

Now, what caused this increase? What was it that was able to attract those young students?

Dr. McDEMMOND. Well, giving them the opportunity. One of the things that we did was to accredit our computer science program early. So that program was a top-notch program. Students coming out of that program right now make around \$60,000 at top firms throughout the United States as an undergraduate degree. Through the OCR agreement, we just received approval to have a master's in that computer science program. So we know that we can continue to do this.

Having the right kind of program, Senator, making sure the students have the infrastructure, the actual wiring and capabilities. We struggle every day to make sure that our students have some means of computer access. Our dorms are not wired. So if the students go back to their rooms, they have to get up and go to the lab. But if they had a laptop right there in their dorm, there would be so much more advantage to be able to take full opportunity of science and technology careers.

But I think clearly, having the programs, the quality programs, the quality that they need, and we speak to that at Norfolk State a whole lot, the whole quality of the education.

Senator ALLEN. You wouldn't be one of those four universities that I've been asking—

Dr. McDEMMOND. No, sir.

Senator ALLEN. Do you know what those four are?

Dr. MCDEMMOND. I know Spellman, Morehouse, Clark, AU. I used to be Vice President of Finance at Atlanta University, so I do know that they had quite an endowment when I was there. But we only have \$7 million in our endowment at Norfolk State, and I am working daily to increase that number. But as you can see, a \$7 million endowment does not give us much flexible resources, not like Mr. Jefferson's university, sir.

Senator ALLEN. Not even like Virginia Tech, as far as the requirement that all students have computers at Virginia Tech, which is not your sister university. Well, I guess to some extent, Virginia State is.

But then your testimony is that Senator Cleland's bill would be very helpful. It is a step in the right direction. I am going to ask, as Senator Cleland is listening to all this testimony here, this bill, Norfolk State and Virginia State are two State historically black universities in Virginia. We have three independent universities or colleges: St. Paul's, Virginia Union, and Hampton; right?

Dr. MCDEMMOND. Right, there are three.

Senator ALLEN. Would these grants just go to State colleges. Would they also be available to independent colleges and universities?

Senator CLELAND. That is correct, Senator.

Senator ALLEN. Well, in light of the answer to that, and the testimony of Dr. McDemmond and others here, I would ask you, Senator Cleland, if you need some more support on this side of the aisle, I would be very proud to be a co-sponsor of your legislation. I think it is a step in the right direction.

I would hope to get this measure passed this year. I think it is important for the future of our country.

Senator CLELAND. Thank you very much, Senator. We do need support from your side of the aisle, and the fact that you are the Ranking Member on this Subcommittee here, it would be a great boost to the legislation. And I thank you for that.

And I have already asked my staff to check out my being a co-sponsor to your legislation, that you and Senator Boxer have, for a refundable tax credit for the purchase of computers.

Senator ALLEN. Thank you.

Senator CLELAND. I might say that our Governor in Georgia has just put forward through the Legislature, which should pass it soon, a tax holiday in the spring and one in the fall, and to use part of that money to buy computers.

Senator ALLEN. It will work. They will sell a lot more just over that.

Senator CLELAND. Yes, sir. The four colleges that would have to match would be Howard University, Hampton University, and two in my state, Spellman and Morehouse. Which means we will have to work on that section of the bill.

[Laughter.]

Senator ALLEN. No, no. We do not have to do that. The way I see that is that that gives them an added incentive that for every dollar someone gets, they get three dollars back. You can use those sort of matching grants as an incentive for people to be more generous.

Senator CLELAND. There you go. Any further questions, sir?

Senator ALLEN. No, I have no further questions. If I could be excused?

Senator CLELAND. You may. You are excused.

Senator ALLEN. Again, thank you.

Dr. MCDEMMOND. Thank you, Senator Allen.

Senator CLELAND. Mr. Sandoval, you have been so patient. Thank you for being here. Thank you for traveling all the way from Arizona. And we would be glad to hear your statement.

**STATEMENT OF GEORGE SANDOVAL, NETWORK
ADMINISTRATOR, DINÉ COLLEGE**

Mr. SANDOVAL. Thank you for inviting me. Thank you, Senator Allen, and thank you, Senator Cleland. I am here representing Diné College, and we thank you for offering to let us testify.

My name is George Sandoval, and I have been employed for 5 years at the college. I serve as the Network Administrator for Information Services. I am also a former student of the college, and I am Navajo, and I have lived on the reservation for most of my life.

And today I just want to discuss the current technological state of the college, and talk about, I guess, the digital divide that exists on the Navajo Reservation, including the college.

The college was founded in 1968 as the first tribally controlled college in the United States. It has since changed its name to Diné College, and serves eight communities. The main campuses are in Tsaile, Arizona and Shiprock, New Mexico. The other centers are mostly just single buildings, and we have been trying to expand our services out to those communities.

In recent years those centers have accounted for more than half the student population. Diné College focuses on preparing students for transfer to 4-year colleges, as well as entering into employment.

While awarding mostly associate degrees, the college has begun a partnership with Arizona State University, and has now graduated several classes with bachelor's of arts degrees, and two students have achieved their master's degrees, and these are mostly in education.

We have just begun to offer a distance learning via two-way video. And we are also using web applications to try to begin distance learning. We are just at the beginning, and we have a lot more to learn about it.

Nearly 2 years ago, on April 17th, 2000, former President of the United States, Bill Clinton, made a historic trip to the Navajo Reservation and Diné College. This was an exciting time for me, because just the impact of having a President come to the reservation. His main message at this time concerned the digital divide and his commitment to assisting the reservation so that they could have the same opportunities as the rest of the country.

There were two projects that we worked on at that time. One of them was setting up a video conference with the President and elementary students at Lake Valley School. We worked with various entities to get that going and to make it as optimal as possible.

Another project that we spent a lot of time on was bringing the Access Grid to Diné College, and we did that via the NSF-funded Internet 2, and with efforts from the University of New Mexico, Al-

buquerque, High Performance Computing Center, Oregon National Laboratory, the Indian Health Services at Shiprock, and the General Services Administration.

We succeeded in providing content via the access grid to the University of New Mexico, Maui High Performance Computing Center, Boston University, Oregon National Laboratory, and the University of Kentucky. This was just a one-time event. And so about a week after the President left, all the T-1 circuits and the router that we borrowed were removed. However, it was a good experience, and it just proved that we were capable of doing something like that.

In the near future at Diné College we would like to offer more distance learning opportunities, because just the distance between communities and the various centers, we find it helpful when we have even just two-way video and just web courses, where students do not have to be all at one place at one time.

Some of the difficult problems that we face at the college include faculty and staff retention, just basic housing, to bring in staff and faculty, infrastructure. We have problems with electrical overloads, and just bringing in data lines. It is difficult to upgrade because of the older buildings. Of course, we need more office space and classrooms. Sometimes those are hard to find.

Some of the cuts that affect students are related directly to athletics and student clubs, so the students get a lot of cuts for their programs.

Some of our biggest strengths are Diné language programs, the Center for Diné Studies and the Diné Teacher Education Program. That partnership is with Arizona State University. And we are also trying to establish partnerships with Northern Arizona University, with their distance learning program. And we have also worked with the University of New Mexico High Performance Computing Center. And all those partnerships are invaluable. We have really used them.

Some other grants that we receive have also been very helpful. Currently we have a Title III grant, and we are funded for 5 years. We also have a Youth Opportunity grant. And of course there is an AIHEC grant that is working with Microsoft. They are providing training and software for all the tribal colleges.

Some of the donors were, of course the Department of Commerce; we received PCs from them last year, IBM, Reebok, the Department of Agriculture, and the International Commerce Institute have all donated computers to the college, and we have tried to give them directly to students.

The State of Arizona recently passed a compact that will provide \$1.75 million for 10 years. I think that is being challenged, and I am not really sure what's happening with that. But I think that is probably the first time that the State has funded our college.

I would just like to conclude by saying that we are moving at a very fast rate by our standards, but we find that we are yet catching up to other schools that are more advanced, and thus have more opportunities. We are working hard to provide our students the same options that these other universities provide, and with your help these things can happen. And thank you for allowing us to testify.

[The prepared statement of Mr. Sandoval follows:]

PREPARED STATEMENT OF GEORGE SANDOVAL, NETWORK ADMINISTRATOR, DINÉ COLLEGE

INTRODUCTION

Mr. Chairman and members of the subcommittee, Diné College thanks you for the opportunity to express its view on S. 414 the "National Telecommunications and Information Administration (NTIA) Digital Network Technology Program Act."

My name is George Sandoval and I work at Diné College. I have been employed since 1996 and now serve as the Network Administrator for Information Services. I am also a former student of the college. I am Navajo and have lived on the Navajo Reservation most of my life. Today I would like to discuss the current technological State of the college. And then I would like to describe the need for additional assistance in order to bridge the Digital Divide that exists between much of the Navajo Reservation, including Diné College, and the world.

DINÉ COLLEGE FACTS

Navajo Community College was founded in 1968 as the first tribally controlled college in the United States. The college has since changed its name to Diné College and is located on the Navajo Reservation in eight communities. Main campuses are located in Tsaile, AZ and Shiprock, NM. Satellite centers in Arizona are at Chinle, Ganado, Kayenta, Tuba City and Window Rock. Crownpoint is the other center in New Mexico. These community centers have accounted for more than half the student population in recent years.

Diné College focuses on preparing students for transfer to 4-year colleges as well as for entry into employment. Developmental studies are offered for students who need further preparation for college-level studies. While awarding mostly Associate Degrees the college has also begun a partnership with ASU and has now graduated several classes with Bachelor of Arts Degrees and two students have achieved their Master's Degrees.

We have just begun to offer distance learning via video conferencing and web applications. We have much more to learn about distance learning in all its various forms.

PRESIDENTIAL VISIT

Nearly 2 years ago, on April 17, 2000, former president of the United States, Bill Clinton, made a historic trip to the Navajo Reservation and Diné College. His visit lasted only a few hours, but the preparation took many days. I remember the excitement and anticipation as thousands of people awaited his arrival. The president's message during that time concerned the Digital Divide and his commitment to assisting those in need so that they could have the same opportunities as the rest of the country.

I was lucky enough to witness firsthand as he talked to the students of Lake Valley School via the Internet. The Lake Valley School, along with the Diné College sites at Crownpoint and Window Rock, were the recipients of a two-way satellite system donated by Tachyon, Inc. Our techs, as well as techs and engineers from Tachyon worked long hours to ensure that the video conference transmission could be as optimal as possible. The work paid off as the conference demonstrated.

Another project that we spent time on and that we thought was just as important was bringing the Access Grid to Diné College Shiprock via the NSF funded Internet 2. This endeavor was only possible with the collaborative effort of the University of New Mexico Albuquerque High Performance Computing Center, the Argonne National Laboratory, the Indian Health Services at Shiprock and the General Services Administration. We succeeded in providing content via the Access Grid to the University of New Mexico, Maui High Performance Computing Center, Boston University, Argonne National Laboratory, and the University of Kentucky. Unfortunately, the funding to sustain this endeavor was not available and so the six T1 circuits and router borrowed from the various participants were removed. The effort had proven that the technology is accessible.

PLAN FOR THE FUTURE OF TECHNOLOGY AT DINÉ COLLEGE

In the near future we would like to offer more Distance Learning opportunities via video conferencing and web courses. We also will continue to work with nearby Universities and College in order to share resources and extend accessibility to all students. We have plans to offer web registration and student data via the web. As you know, these options are, and have been, available at other colleges and universities.

UNIQUE OR SPECIALIZED PROGRAMS (OUR STRENGTHS)

Some of our biggest strengths include our Center for Diné Studies and our Diné Teacher Education Program. There is discussion on the possibility of offering these Navajo Language course via two-way video and other means. The partnerships that exist with Arizona State University, Northern Arizona University, the University of New Mexico High Performance Computing Center and other schools have proven invaluable.

GRANTS, DONORS, VOLUNTEERS

We have been the recipients of various grants funded by governmental agencies. Some of these grants include the Navajo Learning Network, the American Indian Network Information Center, the Information Engineering Technology Program and the Visualization Lab. These grants have been completed and were very beneficial to Diné College.

Our current grants are Title III (funded October 1, 2000 for 5 years), the Youth Opportunity Grant (funded for 5 years), and the Microsoft AISTEC grant (managed by New Mexico Highlands University; provides training and software for Tribal Colleges).

The American Indian Higher Education Consortium provides various opportunities for Tribal Colleges. They host an Information Technology conference annually. They have also contributed other services to the college including a Y2K assessment in 1999.

We were very appreciative of donations by the following entities: The Dept. Of Commerce, IBM, Reebok, the Dept. of Agriculture and the International Commerce Institute. These entities provided our students with greater computer access. We were able to give more than 60 students computers for their personal use.

The State of Arizona will provide \$1.75 million per year for 10 years for maintenance, renewal and capital expenses. This is from Transaction Privilege Tax revenues.

OPPORTUNITIES

There are other endeavors that we continue to pursue such as the partnership with the IHS Consortium. This will allow us more bandwidth to the Internet. Northern Arizona University has offered to relocate one of their underused studios to Diné College. This will include other benefits such as experience and expertise from NAU Net which has been operating two-way video conferencing in and around the reservation for many years.

We are now working with the General Services Administration and their ANSWER contract. They will provide us with Project Management and other expertise to solve some of our most daunting tasks.

PROBLEMS

Some of the more difficult problems that we face include Faculty Retention, housing (for staff and faculty), infrastructure (electrical, data network, have both become outdated and are difficult to upgrade, dorms/housing for students should be upgraded, and more office space and classrooms are needed). Some of the programs that are affected by budget cuts are directly student related such as Athletics and Student Clubs.

Conclusion

We are moving at a very fast rate at Diné College by our standards. In the 5 years that I have been at Diné College we have installed and implemented various technologies funded by various means. However we find that we are yet catching up to other schools that are more advanced technologically and thus have more opportunities. Diné College is working hard to provide our students the same options that many other universities provide. With your help and the continued hard work of staff and faculty, many of these advances can happen. Thank you for the opportunity to testify today.

Senator CLELAND. Thank you, Mr. Sandoval. What a great testimony and a great story. I would like to ask you a question, Mr. Sandoval. According to the Federal Communication Commission, only a little more than 18 percent of individuals living on the Navajo Reservation, on which Diné College is located, have access to telephones, 18 percent.

How much of a help do you believe this legislation can be in helping to connect not just tribal colleges like Diné, but ultimately the communities in which they are located?

Mr. SANDOVAL. I'm not sure how it can directly help, I guess the rural population, but I know at the college we strive to help the community out as much as we can. I am not exactly sure how they can help with getting phones to, I guess, people that are not involved with the college. But we try to provide for the community.

Senator CLELAND. Well, thank you very much, and thank you, Doctor, for coming. You all have added greatly to our body of testimony. And as we have just heard, Senator Allen is going to be a co-sponsor of our legislation, obviously, persuaded by Dr. McDemmond and others.

I would like to thank the staff for putting this hearing together. The hearing is adjourned.

[Whereupon, at 4:31 p.m., the hearing was adjourned.]

A P P E N D I X

PREPARED STATEMENT OF THE ADVANCED NETWORKING WITH MINORITY-SERVING INSTITUTIONS PROJECT ON S. 414, THE NTIA DIGITAL NETWORK TECHNOLOGY PROGRAM ACT

The Advanced Networking With Minority-Serving Institutions (“AN-MSI”) Project strongly supports the S. 414 legislation to establish a digital network technology program. AN-MSI applauds the Committee and the sponsors of S. 414 for undertaking this very critical initiative to help minority-serving institutions (“MSIs”) strengthen their digital network technology capabilities. AN-MSI also supports the testimonies and recommendations of our Minority-Serving Institution partners who have already testified before the Senate Commerce Committee.

WHAT IS AN-MSI?

The Advanced Networking With Minority-Serving Institutions Project is a 4-year initiative funded under a grant from the National Science Foundation to EDUCAUSE, an association of 1800 colleges, universities and companies dedicated to improving higher education through the intelligent use of information technology. AN-MSI assists MSIs to plan and deploy network systems to fulfill their educational goals and to use digital technologies to manage their institutions. By attaining network systems that meet their needs, MSIs and their students can more fully participate and compete in the “information age.”

Approximately 100 Hispanic-Serving Institutions (“HSIs”), Historic Black Colleges and Universities (“HBCUs”) and Tribal Colleges and Universities (“TCUs”) in 31 states, as well as in Puerto Rico and the Virgin Islands, are members of the AN-MSI consortium. Current partners in AN-MSI include such minority higher education consortiums as: the American Indian Higher Education Consortium, the Hispanic Association of Colleges and Universities, the National Association for Equal Opportunity in Higher Education, and the United Negro College Fund.

WHAT TYPE OF ACTIVITIES DOES AN-MSI SUPPORT?

AN-MSI offers a comprehensive array of technical assistance and services to support minority-serving institutions’ efforts to develop state-of-the-art networks and network applications. Key principles guiding AN-MSI’s efforts are: helping consortium institutions to plan and determine their own network needs; training institutions and key staff to train other staff and institutions; using alliances among higher education institutions to support their digital technology needs and promoting collaborations to help MSIs to support themselves; and, providing resources and information to help them to implement their advanced networking projects.

AN-MSI services and products supporting advanced networking include:

- Assessing individual campus needs and capabilities
- Working with institutions to develop strategic plans to improve campus networks and Internet connectivity
- Supporting institutions to apply network tools with which to teach, learn, research and collaborate
- Assisting institutions to deploy network security and monitoring systems
- Providing training for administration and maintenance of networks
- Consulting on campus IT and networking system architecture and implementation
- Establishing remote technical support for networks
- Developing and mentoring student-managed technical services
- Increasing the capacity of and sustaining networking efforts
- Helping institutions develop funding models and plans to pay for networks
- Expanding and educating faculty, students and staff on campus network services
- Evaluating networking efforts

LESSONS LEARNED BY AN-MSI

For over 2 years, AN-MSI has embarked on the mission of helping MSIs attain digital network technology equality. Minority-serving institutions have worked diligently with very dedicated staff to provide the best networking services to their students and faculty that their small staff and meager technology budgets can afford. There simply is not enough money. This is an area where the under-funding of minority-serving institutions clearly shows. While each minority-serving institution has its own technology needs and issues, one of the profound lessons learned by the AN-MSI project serving over 100 institutions is that so many MSIs are not fully “network ready” for their students. Campuses often lack a number of critical items: current technologies and capacity, the necessary staffing skills and support mechanisms to manage their technology systems, knowledge of their IT structure and capabilities, sense of their IT needs, a strategic IT plan, the resources to deploy a network to meet their educational and administrative needs, and the additional resources later to refresh their digital technologies.

MSIs’ Capacity to Support Digital Technologies:

Based on these realities, we recommend that the proposed NTIA Digital Network Technology Program be expanded to reflect a broader range of MSIs’ technology needs. The proposed authorization language in Section 171 reads: “to strengthen the capacity of eligible institutions to provide instruction in digital network technologies. . .” Section 172(1) authorizes a range of acquisitions necessary “to teach students and teachers about technology in the classroom.” Beyond instruction in digital network technologies, a concerted focus needs to be directed at MSIs to provide instruction with digital technology; that is to enhance their capacity to carry out their overall teaching and learning mission. Without funding the institutional capacity to support digital network technologies, a greater MSI need will be overlooked. Put another way, without the basic capacity to sustain campus digital networks, and without teaching by example, little can be derived from classroom instruction on digital network technologies.

MSIs’ Need for Technical Support and Collaborative Strategies:

Given these “resource” challenges at Minority-Serving Institutions, AN-MSI has applied its limited funding to support innovative and cost-efficient strategies to meet their networking needs. AN-MSI has co-sponsored IT training and produced a campus network architecture guideline document for use by campus network technicians. AN-MSI is disseminating background information on IT issues; has created a website with resource information and links providing practical information on how to plan for campus IT deployment; and will be developing an inventory of effective IT practices deployed by other MSIs and EDUCAUSE institutions. AN-MSI has sponsored technical assistance site visits to MSI campuses to help them with their network documentation, systems assessment, IT planning, leadership education and involvement, technology options, and teaching applications. AN-MSI also supported the development of key collaborations with other MSIs, private sector partners and resource service providers to help them with their digital technology deployment.

Dr. Gerald Monette, President of Turtle Mountain Community College and Chairman of the Technology and Infrastructure Development Committee of the American Indian Higher Education Consortium testified before you on February 27th. He recommended including provisions in S. 414 to support strategic IT planning. “Specifically, planning needs to be focused on the unique nature and mission of institutions of higher education. Possible models include the AIHEC/AN-MSI partnership currently underway to provide technical assistance to NSF-TCUP grantees.”

The strategic support and intervention developed by AN-MSI is essential for the success of MSIs in building their digital network systems and in developing new and innovative digital learning applications. Mr. Monette further stated: “funding to expand this effort and ensure strategic IT planning, possibly through the Department of Education’s Titles III and V programs for Institutional Development, or the National Science Foundation, could be a wise investment.” AN-MSI concurs with AIHEC’s recommendations on the vital importance of investing in strategic planning to support MSI digital deployment. To accomplish this effectively, AN-MSI recommends that collaborative digital technology projects supporting MSIs, be directly eligible to receive funding for technical services to MSIs. The Act strongly encourages and supports activities to implement joint projects regarding technology in Section 172(4). However, funding for eligible non-profit MSI collaborative organizations is only referenced in Section 3(6)(1)’s definition for HBCUs, as “a consortium of institutions described in this subparagraph.” The Act should make more explicit that all national non-profit MSI consortiums are eligible for direct funding.

A Need to Test New Services and Technologies and to Share the Knowledge

In his testimony before the Subcommittee, Dr. Fred Humphries, President & CEO of the National Association for Equal Opportunity in Higher Education, emphasized in his recommendations: “MSIs should be involved in the research and development of cutting edge technology to assure that they can secure and maintain state-of-the-art technology. Furthermore, they should be involved in the economic development of their communities around the new economy, including training as well as entrepreneurial development.” We support Dr. Humphries’ recommendation.

AN-MSI, cognizant of the uniqueness of MSIs, has seeded pilot projects to develop digital network solutions, services and applications that can be used by all MSIs. AN-MSI has funded a wireless broadband infrastructure project to provide multi-media access to rural tribal colleges; a network security collaborative project with HSIs; a network system monitoring and reporting project with HBCUs; is assisting the development of a pilot project to build a collaborative IT human resource knowledge base among HBCUs in North Carolina; and funded the deployment of a cutting-edge video-conference collaborative curriculum on IT teaching and learning applications. Through its grant partner, EOT-PACI, MSIs are participating in workshops on developing research clusters and are involved in activities and conferences to learn about and to implement advanced computational research infrastructures and partnerships.

Authorizing collaborative pilot projects to develop new services, applications and technologies for use by all MSIs will strengthen the bill.

Importance of Knowledge and Resource Bases

Dr. Antonio Flores, President & CEO of the Hispanic Association of Colleges and Universities, emphasized in his testimony before the Subcommittee: “. . . the social and economic impact of the digital divide relates to more than just physical access. It also involves skill in the use of information technology, especially in ways that help one to learn, gather information, critically analyze data, and generate new knowledge and understanding.” AN-MSI fully concurs with Dr. Flores.

A key component often overlooked in the deployment of digital technologies is the development of the “human network” and “knowledge-network” that is essential to bridging the digital divide alluded to by Dr. Flores. AN-MSI has embraced this policy by supporting unique collaborations among MSIs and with private sector partners. AN-MSI has also funded the dissemination of vital knowledge through training partnerships with the NSF, EDUCAUSE, the NSF-funded Partnership for Advanced Computational Infrastructure, Internet 2, and others. AN-MSI is also developing a resource base of knowledge to help MSIs replicate the digital deployment efforts of other MSIs and institutions in EDUCAUSE.

Collaborations, training and knowledge bases should also be explicitly funded under S. 414. The building and use of knowledge bases and networks is essential to the deployment of digital network technologies.

SUMMARY OF RECOMMENDATIONS

1. Support the use of digital technologies to teach by clarifying the authorization under the Act to include “strengthen the capacity of eligible institutions to provide instruction in and using digital network technologies by providing grants to, or executing contracts or cooperative agreements with, those institutions to provide such instruction and strengthen their digital network technology capacity” (Sec. 171, modifications in bold italics);

2. Further support the use of digital technologies to teach with by adding in Section 172(1) support for activities to include acquiring “. . . digital technology, and infrastructure necessary to teach students and teachers about technology in the classroom or to teach with.” (Modification in bold italics);

3. Permit use of funds for digital technology strategic planning by the institution and by non-profit MSI collaborative organizations with expertise to assist campuses with their digital technology strategic planning or render other technical assistance to implement digital network technologies; (Sec. 172(2) add-in, or add Sec. 172(6) to activities supported);

4. Permit use of funds to implement a joint project with other institutions, non-profit MSI collaborative organizations, or collaborative partners to provide education regarding technology in the classroom or technology for the institution. (Sec. 172(4), modifications in bold italics);

5. Permit the use of funds to support or develop a collaborative resource network or data base to support the development of digital technology by MSIs. (Add Sec. 172(7));

6. Permit consortiums of institutions collaborating under the Act or non-profit MSI collaborative associations to be eligible for funding to assist MSIs to develop, enhance and support digital technology systems, and to receive and provide training for digital network technologies. (Sec. 102(a)(6), add "(G)" to definitions of eligibility.)

CONCLUSION:

The time is very late for minority students and institutions trying to compete in a new technology marketplace. Not only is digital technology an important subject matter to teach and to learn, it is an essential means of learning and teaching. AN-MSI supports the Senate's effort to strengthen the digital technology capacity of MSIs and stands ready to assist the Committee and Congress in any manner you deem necessary. Thank you for accepting AN-MSI's testimony.

