



STATEMENT OF THE AMERICAN INDIAN HIGHER EDUCATION CONSORTIUM
DR. GERALD MONETTE
PRESIDENT, TURTLE MOUNTAIN COMMUNITY COLLEGE
CHAIRMAN, AIHEC COMMITTEE ON SCIENCE, TECHNOLOGY ENGINEERING, & MATHEMATICS
HEARING ON TELECOMMUNICATIONS IN INDIAN COUNTRY
COMMITTEE ON INDIAN AFFAIRS
UNITED STATES SENATE
SR-485
May 22, 2003

Mr. Chairman and distinguished members of the Committee, thank you for inviting me to testify 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 34 Tribal Colleges and Universities (TCUs), I want to thank the members of this Committee for your support of our institutions. The faculty and staff at our institutions work hard every day to help build a better life for our children through education. It is good to know that you are working with us, in this important place, for the benefit of our children and our communities.

For today's hearing, I have organized my testimony in three parts: (1) background on technology development at the tribal colleges and strategies we have taken to bring new technological opportunities to our people; (2) some specific examples of telecommunications development and innovation at the tribal colleges, including Turtle Mountain Community College's wireless Internet backbone project; and (3) a few recommendations on legislative initiatives for the Committee's consideration.

TECHNOLOGY DEVELOPMENT AT TRIBAL COLLEGES & UNIVERSITIES: *THE CIRCLE OF PROSPERITY PLANNING PROCESS*

Mr. Chairman, I do not believe it is necessary for me to provide an assessment of the state of telecommunications in Indian Country, or to review the history of the Tribal College Movement. Ample testimony has been provided on the former; and as to the latter, this Committee alone in the Congress knows our history well. I will simply say this: American Indian Tribal Colleges are young, geographically isolated, and poor – the poorest institutions of higher education in this country.

For the past three decades or so, Tribal Colleges have been working with our chartering tribal governments to protect what was ours: our land, our language, our communities, and our culture. At the same time, we are striving to ensure that our children have access to high quality educational opportunities and that our communities have the tools

they need to successfully join in this nation's economic prosperity. Isolated reservation-based Tribal Colleges do all of this on budgets that are far less – about \$3,800 per student – than any other group of colleges and universities in this country.

It is in the context that people at the Tribal Colleges first learned of the Internet and the awesome power that information and communication technologies have in bridging the boundaries of geography and time.

By the 1990s, information and communication technologies had become fundamental components of teaching, learning, and research in higher education. Tribal Colleges and Universities – because of our poverty and isolation institutions -- had the most to gain, or lose from this evolution. Yet, the new technological revolution was largely passing us by, just as it bypassed most of Indian Country. We were faced with two choices: either we could view our communities' lack of access to technology as a "Digital Divide" that most of us would never cross; or we could view technology as a "digital opportunity."

We chose the latter. In late 1999, we began implementing a series of steps that would lead to the creation of a dynamic and broad-based strategic plan to guide our collective effort to join the technology revolution. Our goal: to reach a "Circle of Prosperity," a place where tribal traditions and new technologies are woven together to build stronger and more sustainable communities. We call our plan the "Tribal College Framework for Community Technology." It is a framework of strategic partnerships, resources, and tools that is helping us create locally based economic and social opportunities through information and communications technology and use of the Internet. We developed our plan through a series of five phases:

Phase I (Spring 1999): Tribal College presidents 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
- (1) to develop tribally and culturally centered applications of information technology.

In addition, key Tribal College faculty and staff launched an educational awareness campaign, called the "TCU High Performance Computing Initiative."

Phase II (Summer 2000): Tribal College and University presidents and their representatives met in a half-day session to review our progress, re-assess our priorities, and began planning strategies for a comprehensive framework to be considered during Phase III, the Tribal Technology Prosperity Game.TM Using a format for highly interactive and systemic dialogue, each participant had the opportunity to explore questions and apprehensions about the initiative and its implementation and, together, we discussed visions for the future and specific action steps for achieving a unified ICT vision.

Phase III (Fall 2000): 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 Tribal Colleges and Universities. To begin our work, the colleges used a methodology called a “Prosperity Game,” a highly interactive, fast-paced, and remarkably effective strategic planning 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 2.5-day Prosperity Game, which was led by a team of 13 trained facilitators, participants engaged in team interaction aimed at identifying challenges and developing policy options and strategies for the coordinated TCU Framework for Community Technology. Sector teams included:

- Governments (including tribal governments)
- Education (including tribal colleges and their education partners)
- Private Sector (IT providers)
- Research & Development
- Public (including tribal elders and community members)

The format of the event encouraged collaboration and coordinated action and resulted in the development of new resources, agreements, options, and plans that were further refined in the Phase IV “crafting circle” event.

Phase IV (Winter 2000-2001): Within weeks of the Prosperity Game, a smaller Prosperity team met for 2.5 days to refine the plans and Framework initiated at the Game. Following a facilitated format for decision-making, which included rotating “crafting circles” and cutting edge computer modeling and simulation, approximately 40 participants (most of whom had attended the Prosperity Game) began to identify the what, who, how, and when of the strategic plan. The result, by January 2001, was the first iteration of the “TCU Framework for Community Technology.”

Phase V (February 2001 and Ongoing): In February 2001, the AIHEC Board of Directors adopted a strategic technology plan that embodies the TCU Framework for Community Technology. With support from the National Science Foundation, NASA, Microsoft Corporation, and others, AIHEC established a national coordinating office and launched a series of activities representing the initial phase of TCU Framework implementation. Most important, AIHEC is bringing the Framework full circle, back to each Tribal College individually, through the encouragement of and assistance with community-based strategic IT planning. In addition, AIHEC is undertaking a series of regional IT planning sessions to ensure that the Framework and all activities that flow from it are responsive to the specific and evolving needs of the tribal colleges. We have learned that planning on this level is a never ending process. It is a circle of continuous improvement through locally and nationally-based assessment, planning, implementation, and evaluation that is continually repeated.

Without going into detail about all of the activities that have been developed as a result of the Framework, the following is a summary of the original eight strategic areas that comprise the TCU Framework for Community Technology:

- **INFRASTRUCTURE:** To 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.
- **CULTURE:** To establish an advisory network 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.
- **LEADERSHIP & COORDINATION:** To 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:** To 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:** To ensure that TCUs have the 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:** To enhance TCU research capabilities by encouraging linkages to national super-computing infrastructure initiatives (e.g. the Access Grid); participating in Internet2; establishing local cluster computing projects; adopting low-cost Internet-based collaborative tools (teaching and research laboratories); 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.

TCU DEVELOPMENTS & INNOVATIONS IN TECHNOLOGY

A. Infrastructure Development.

Mr. Chairman, just a few short years ago, a number of Tribal Colleges had only one computer on their entire campus connected to the Internet, and that connection was

through dial-up access! These institutions had no computer labs, or if they did, the labs were stocked with old and cast-off equipment. Many colleges could not meet requirements by federal agencies that grant proposals, reports, and other documents be submitted on-line. Their students could not access the wealth of research information available via the AIHEC virtual library, nor could their share courses and instructors through web-based delivery systems.

Today, I am proud to say that every one of the 34 Tribal Colleges, despite our remoteness and poverty, has achieved broadband Internet connectivity for our campuses, most through multiple T-1 lines. Our colleges have well-equipped computer labs; we have robust and growing distance education programs; and we are using technology to enhance teaching and learning in new and innovative ways.

Without question, we still face significant challenges: our communities lack Internet access; the lifespan of technology-related equipment is short and upgrades are expensive and complex; the standards for basic ICT infrastructure are changing rapidly. Most important, our institutions lack adequate human and fiscal resources. But even in the face of these challenges and more, our accomplishments over the past few years are significant.

B. Wireless Backbone Project .

An interesting example of our efforts over the past few years is AIHEC's wireless backbone project. To provide high-speed connectivity to remote institutions and our satellite campuses (where laying fiber optic cable may never be cost effective), three Tribal Colleges – including Turtle Mountain Community College -- are piloting state-of-the-art wide-band wireless backbone technology. And we are setting distance records in the process.

Last year, TMCC established a point-to-point 20 Mbps wireless infrastructure ring around our reservation, running from our College site in Belcourt to several locations in other parts of the reservation. In addition, we established a point-to-multipoint access point at the local radio station tower, KEYA-FM, which provides line-of-sight (LOS) access for a ten-mile radius around the site. The system uses commercially available and cutting edge technologies – pushing them to new distance limits -- and unlicensed spectrum. It is providing TMCC, some local K-12 schools, tribal courts, and other tribal offices with excellent broadband connectivity, significant cost-savings over traditional services, and the ability to deliver broadband multi-media capacity and applications that are not currently available in most rural and tribal communities.

However, installing the wireless backbone was not without its challenges. Our institution first had to educate the local community and the tribal government on the initiative and win their support for our effort. We had to obtain local permissions to mount and install the wireless transmission equipment at the necessary locations. Finally, we had to establish a working agreement with the local public utility. Without these relationships in place, our initiative would have failed.

I am pleased to report that the system has been in place and performing well for several months. It is cost-effective, easy to maintain, and adequate for our needs. And it has pushed wireless technology to a level never before attained in terms of "First Mile" access.

As the next step in our technological evolution, TMCC is working with all of the Tribal Colleges in North Dakota through our regional consortium, the North Dakota Association of Tribal Colleges, to develop a tribal college Internet network within the new state network structure, STAGEnet. Through our partnership with the State, we will be able to improve our Internet connectivity, significantly reduce Internet Service Provider costs, avoid duplication of network services, and improve distance education delivery capacity at all of our Tribal Colleges.

B. Additional Framework Activities

Distance Education: Through the Internet and other information technology applications, all but five Tribal Colleges offer technology-mediated education. An expanding ability to network with other colleges, universities, and tribal institutions is enabling our 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 are beginning to develop an Internet-based library designed to enhance the limited library resources traditionally available in Indian Country. The virtual library, which uses open source software, has been installed at nearly every tribal college. Each college has a locally controlled library web site, which: (1) provides student and community access to local TCU library and curricula resources; and (2) interfaces 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 year, the National Science Foundation awarded AIHEC a planning grant to collaborate with NSF's National Science, Mathematics, Engineering, and Technology Education Digital Library community. Unfortunately, funding for the AIHEC virtual library will expire in June 2003. Without additional support, this valuable resource may be forced to shut down.

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. (www.anmsi.org) The project is designed to improve networking architecture; improve Internet connectivity in remote areas served by MSIs; assist college presidents and administrators in improving our knowledge of technology; 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, including the above mentioned wireless project, 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, including vitally important information security support and education projects. However, AN-MSI’s funding is also set to expire this year. If additional funding is not secured for this project, the federal government’s only cross-community collaborative technology initiative for minority serving institutions will cease to exist.

LEGISLATIVE RECOMMENDATIONS: QUANTIFIABLE TCU-ICT GOALS FOR CONGRESS AND FEDERAL AGENCIES

First, AIHEC thanks the members of the Committee who cosponsored **S. 196, the Digital and Wireless Network Technology Program Act**. We are pleased that the bill passed the Senate recently with your strong support. We believe S. 196 represents significant steps forward in our efforts to develop and use technology in a manner consistent with our respective missions and tribal communities. Other initiatives and issues to support or address include:

1. TCU Framework for Community Technology: Federal agencies, foundations, and the private sector should support the TCU Framework for Community Technology with specific initiatives as set forth in the Framework.

2. Existing TCU-Federal Agency Partnerships: Funding should be increased at reasonable increments over the next three years in specific areas:

- **National Science Foundation Tribal Colleges & Universities Program:** Expand from \$10 million to \$30 million per year.
- **National Aeronautics and Space Administration Cooperative Agreement:** Expand from \$2.1 million to \$6 million per year.
- **DoD Equipment and Instrumentation:** Expand from \$3.3 to \$17 million per year

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 a partnership to provide technical assistance to Tribal Colleges, which AIHEC with the Information Technology Association of America (ITAA) and the Advanced Networking with Minority Serving Institutions project (AN-MSI). Funded by the National Science Foundation, AIHEC, ITAA and AN-MSI are sponsoring technical assistance teams that 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. Authorization and funding to expand this effort and ensure strategic IT would be a wise investment. Federal agencies including the National Science Foundation, NASA, and the Department of Education should allocate specific funding to ensure that all tribal colleges and universities have access to strategic IT planning tools and resources.

4. Opportunity Parity: As new federally funded programs are developed, federal agencies and the private sector 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.”

At the same time, programs specifically established for the youngest and poorest institutions of higher education in this country -- Tribal Colleges and Universities – and based firmly on federal trust responsibility and treaty obligations whose consideration was the exchange of millions of acres of land, should be reserved for the benefit of these institutions. The programs should not be available to large, well established state- and privately-chartered institutions that already have Internet 2 connectivity, Research 1 status, comfortable endowments, and adequate public or private funding.

Federal funding should be targeted at institutions that meet the spirit and letter of the law with respect to tribally-controlled colleges and universities. In short, programs intended for Tribal Colleges and Universities should exclude Research 1 institutions, institutions with significant endowments, institutions that are unable to sufficiently verify defined minority status, and institutions with proven track records of successful competition in an agency’s more complex programs. For example, with respect to the National Science Foundation’s TCU program, the Agency should be prohibited from accepting applications from institutions with endowments over a certain size, institutions with multiple NSF grants, or institutions with NSF grants totaling more than a pre-determined dollar amount.

5. Higher Education Act and Carl Perkins Act Reauthorizations: Specific programs should be authorized and funded to establish Tribal College technology development and workforce programs, including an American Indian ICT Workforce Development and Technical Assistance program.

6. National Security Programs: As members of the Committee know, long expanses of our nation's borders with Mexico and Canada include Indian reservations and tribal lands. In fact, three Tribal Colleges – Turtle Mountain Community College in North Dakota, Tohono O'odham Community College in Arizona, and Blackfeet Community College in Montana -- are located in very close proximity to international borders. Several other Tribal Colleges are not far away from our borders. As potentially key players in the nation's effort to secure our homeland, Tribal Colleges and Universities should be included in new research, infrastructure, and education and training initiatives involving information and communications technology security and disaster preparedness and recovery. As new legislation is developed, provisions should be included specifically addressing this important point.

7. Cyberinfrastructure & Grid Computing: We urge the members of the Committee to be aware of a powerful new report by the National Science Foundation's Blue Ribbon Panel on Cyberinfrastructure. Entitled "Revolutionizing Science and Engineering Through Cyberinfrastructure," the report makes specific recommendations related to Tribal Colleges and Universities and other minority-serving institutions. Following careful study of the report, I urge this Committee to take steps to ensure that the National Science Foundation implements the panel's recommendations. Specifically, NSF should develop a timetable for implementing the Report's recommendations related to Tribal Colleges and Universities and other minority-serving institutions. Further, as other Senate Committees put forth legislation and appropriations related to the U.S. cyberinfrastructure, we urge members of this Committee to ensure that Tribal Colleges are included.

8. 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. Recently, 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.

9. "Indians into Technology" Program: We urge the Committee to support an initiative first endorsed by Senator Dorgan to establish an "Indians into Technology" program. This proposal is based on a similar and highly successful program created by Congress in the mid-1970s to help address the critical need for medical professionals from and working in Native communities. Through the innovative "Indians Into Medicine" (INMED) program, which began at the University of North Dakota-Grand Forks (<http://www.med.und.nodak.edu/depts/inmed/>), 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.

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. Under our proposal, Tribal Colleges could address areas of critical need, including:

- campus information technology infrastructure and science, technology, engineering, and mathematics (STEM) programs;
- educational and personal support for students from elementary through professional school, including summer sessions for students from elementary school through college;
- 12-13 and 14-15 bridge programs and summer preparation programs;

10. Remote Technical Support and Distributed Learning Infrastructures: 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. The National Science Foundation or Department of Education's Title III program, should make funding available to encourage and sustain remote technical support, training cohort programs, and student-based ICT technical support models at tribal colleges and universities.

In closing, Mr. Chairman, I will reiterate the Tribal Colleges and Universities that comprise the American Indian Higher Education Consortium are committed to working with all of our partners toward a new age of discovery and knowledge. At the same time, we are committed to revitalizing our communities and America's economy through entrepreneurship. And we are committed to working with the Congress, federal agencies, and the private sector to build a bridge of technological opportunity across our vast nation. Thank you.

FOR ADDITIONAL INFORMATION, CONTACT:

Carrie L. Billy
Director of Technology Development
AIHEC
703.838.0400 x107
703.838.0388 (fax)
cbilly@aihec.org

Meg Goetz
Director of Congressional Relations
AIHEC
703.838.0400 x111
703.838.0388 (fax)
mgoetz@aihec.org