

**MINUTES
of the
FOURTH MEETING
of the
SCIENCE, TECHNOLOGY AND TELECOMMUNICATIONS COMMITTEE**

**August 23-24, 2017
Western New Mexico University
Silver City**

The fourth meeting of the Science, Technology and Telecommunications Committee (STTC) was called to order by Representative Candie G. Sweetser, chair, on August 23, 2017 at 10:10 a.m. at the J. Cloyd Miller Library on the campus of Western New Mexico University (WNMU) in Silver City.

Present

Rep. Candie G. Sweetser, Chair
Rep. Jason C. Harper
Sen. Mark Moores
Sen. Bill B. O'Neill
Rep. James E. Smith
Sen. William P. Soules
Rep. Linda M. Trujillo

Absent

Sen. Michael Padilla, Vice Chair
Sen. William F. Burt
Rep. Daymon Ely
Rep. Kelly K. Fajardo
Rep. Debra M. Sariñana
Rep. Monica Youngblood

Advisory Members

Sen. Craig W. Brandt
Rep. Stephanie Garcia Richard
Sen. Ron Griggs
Rep. Bill McCamley
Sen. Mary Kay Papen
Sen. Nancy Rodriguez
Sen. Bill Tallman

Sen. Jacob R. Candelaria
Sen. Carlos R. Cisneros
Sen. Richard C. Martinez
Sen. William H. Payne
Rep. Debbie A. Rodella
Rep. Nick L. Salazar
Rep. Carl Trujillo
Sen. Peter Wirth

Guest Legislator

Rep. Rodolfo "Rudy" S. Martinez (8/23)

(Attendance dates are noted for members who did not attend the entire meeting.)

Staff

Mark Edwards, Legislative Council Service (LCS)
Ralph Vincent, LCS
Sara Wiedmaier, LCS

Guests

The guest list is in the meeting file.

Handouts

Handouts and other written testimony are in the meeting file.

Wednesday, August 23

Welcome and Introductions

Representative Sweetser welcomed the committee to the fourth meeting of the STTC for the 2017 interim. Members of the committee and staff were invited to introduce themselves.

Welcome to Grant County

Mayor Ken Ladner welcomed the committee to Silver City and thanked the members for their visit. He introduced Brett Kasten, chair, Grant County Commission, and Evangeline Zamora, president, Grant County Prospectors. Mayor Ladner stressed the importance of high-speed broadband availability and other technology efforts in relation to the population growth in the area.

The chair recognized a citizen for comments regarding people with electromagnetic hypersensitivity. This citizen, who did not want to be identified, stated that three to five percent of the population suffers from electromagnetic hypersensitivity, that shielded hard-wired connections are preferable and that Silver City already has enough wireless signals.

WNMU: Transforming the Future Together

Dr. Joseph Shepard, president, WNMU, discussed various initiatives in directing the university into the future. Dr. Shepard discussed the need for a diverse economy and drew comparisons between the development in Arizona with a population of eight million and New Mexico with a population of two million. He discussed the importance of science and technology in moving New Mexico forward and challenged the committee to look at education as the economic driver. He stressed the importance of students needing to read proficiently by the third grade and the importance of programs and technology in meeting this goal.

Dr. Shepard compared the broadband speeds that are available in the Silver City area to other parts of the state. WNMU has only 25 percent of the bandwidth available at Eastern New Mexico University, and the cost is greater at WNMU. This discrepancy is caused by WNMU's location relative to the larger transmission lines that transport the broadband data. The broadband fiber that provides Silver City access to the internet comes up from a trunk in Deming. Dr. Shepard stressed the need for investment in this infrastructure across the state because of the technology of the future and noted that 45 percent of WNMU's courses are offered online and that 50 percent of WNMU's students take classes online.

Dr. Magdaleno Manzanarez, vice president for external affairs, WNMU, discussed the importance of WNMU's role in community and workforce development. He stated that WNMU offers certifications in electrical work and welding.

Dr. Jack Crocker, provost and vice president of academic affairs, WNMU, discussed WNMU's role in distance learning and described the technologies used to provide synchronous

video conferencing as well as video capture and streaming for subsequent viewing by students. Dr. Crocker discussed WNMU's role in informing and educating students to "become the future".

The committee then entered into a general discussion. There were several questions on the role of universities and, in particular, on the role of traditional classrooms as opposed to distance learning. Distance learning options are continuing to grow because of the convenience, but universities are still a cultural hub where students can identify and participate in the stimulating opportunities that are offered on campus. Grand Canyon University in Phoenix was presented as an example of the growth in distance learning. While still relatively new, Grand Canyon University has 80,000 students, with 75 percent of the students participating solely online.

It was noted that there has been a paradigm shift for faculty. Those who have been faculty for longer than the past decade have had to learn new methods for presenting material with online courses.

WNMU has 3,500 students, with approximately 2,000 from the Silver City area. This includes about 1,000 students who attend classes on campus, including 300 student athletes. More than one-half of the student population is at least 24 years of age. WNMU's tuition is about \$6,200 for 32 credit hours. Even the out-of-state tuition is less expensive for most students. WNMU has also instituted an intern program for students who are not local but can participate in an intern program in their current locations.

There was a question about why capital outlay funds could not be used to purchase equipment for classroom and research activities. It was explained that there is a guideline for spending capital outlay funds on facilities and equipment that have a life span of 10 years or more.

WNMU has to be able to predict the needs of its students in advanced technologies so that students are marketable when they graduate.

There was a concern expressed that the state is subsidizing the cost of education for out-of-state students and whether there is any benefit to the state. The annual cost for educating one student is about \$15,000, but the tuition cost is about \$6,200. It was stated that there is an appropriate balance that is predicated on economies of scale and the collaborative program efforts of the institutions participating within the Western Interstate Commission for Higher Education.

Challenges of Remote Education

Jason Collet, chief information officer, WNMU, Donna Rees, director of extended university, WNMU, Dean Foster, director of online learning, WNMU, and April Hanson, video communications manager, WNMU, discussed the infrastructure challenges that they face in providing video streams for online class materials. The availability of broadband bandwidth in the Grant County area is limited and the cost is significantly higher than other parts of the state, such as those within the service areas of the Rio Grande corridor and the "eastern loop" that

services Portales, Carlsbad, Clovis and Roswell. In Grant County, there are no providers that can deliver more than one gigabyte to a site, and the only residential option for broadband offers 12 megabytes over cable. These bandwidths limit what the university can provide and what its students can receive effectively. The cost per megabyte of bandwidth is about \$4.50 for WNMU, while the cost at the University of New Mexico (UNM) is less than \$1.00. Additionally, all of the transport of data is over a CenturyLink fiber line from a trunk in Deming with little redundancy. While WNMU has extended its online offerings, the basic infrastructure in the area does not support any further growth.

Grant County Collaboration: Building Interconnectivity

Alex Brown, town manager, Town of Silver City, Mr. Collet and Ben Potts, director of technology, Silver Consolidated School District, discussed their collaboration efforts to expand broadband within the area school system and to public buildings and the hospital. The group has collaborated with local internet service providers to create a countywide network. While there is a national goal to provide one megabyte per student, the Grant County area only has the resources for about six percent of that goal. There are 3,000 students in the local school district, and this limitation is particularly challenging to meet the computer-based testing requirements.

The group has also collaborated on other infrastructure needs, such as a network firewall and a security consultant to support the network. The group has developed a joint powers agreement to manage the project.

In the ensuing committee discussion, the members discussed legislation that was passed during the 2017 regular legislative session and questioned the progress that had been made to date. In particular, House Bill 113 directs the state's chief information officer to develop a statewide broadband network plan in conjunction with public institutions and broadband service providers. Senate Bill 24 amends the Infrastructure Development Zone Act to provide for broadband infrastructure development by a local government, and Senate Bill 63 expands allowable expenditures under the Public School Capital Improvements Act and the Public School Buildings Act to include purchasing and installing education technology improvements. The panelists were encouraged to investigate how these changes to the statutes can help the group to move forward. Other options were discussed, including the use of E-rate funds and other means to work with UNM or another higher education institution.

Using Mixed Technologies to Build Reliable Connectivity in Rural Areas

John Badal, chief executive officer, Sacred Wind Communications, discussed the achievements that Sacred Wind Communications has made in providing broadband to the Navajo Nation. Even though in its service area, the rights-of-way process is longer and the return on investment is lower than the typical business model, to date, Sacred Wind has been able to achieve 90 percent availability with 25 megabyte bandwidth in one of the most difficult regions in the country. The company has also established fiber connections to Milan anchor institutions; fixed wireless to the Pueblo of Laguna; and other fiber to fixed wireless connections down Interstate 10 to Milan, Grants and Bluewater Village. Other communities in Cibola County are next in line for the extension of broadband services.

Sacred Wind has two central offices, 28 towers, 100 miles of new copper lines, 100 miles of optical fiber and 2,400 new customer installations for voice service. The company employs 44 staff members, with most having no prior telecommunications experience. Staff are provided training and development relevant to their responsibilities. Seventy-one percent of the staff is of Navajo or Hispanic descent. The company's goal is to be employee-owned within 10 years. (See the handouts in the archives for further information.)

In the ensuing discussion, the members explored further information regarding the Public Regulation Commission's roles in rulemaking for the broadband fund, rights of way and pole attachment fees. The Public Regulation Commission is accepting final comments on proposed rules regarding the use of the broadband fund. The Public Regulation Commission does not create rules covering pole attachment fees, but the annual cost is around \$20.00 per pole and there are about 22 poles per mile.

Developing Remote/Solo Work Centers: Challenges, Benefits and Case Examples

Emily Schilling, economic development planner, Southwest New Mexico Council of Governments, Mr. Badal and Ralph Gauer, vice president, Karen Carr Studio, discussed the need to build sufficient broadband infrastructure even in areas that are more remote. The Karen Carr Studio was used as an example. The studio provides digitally based visual content to museums and other institutions around the world. For a remote community, the upside of a business like Karen Carr Studio is that it does not have to be based in a large, urban area to create its product. However, the downside is that delivery of the product is dependent on broadband reliability and transfer speeds. Mr. Gauer explained that in those two delivery criteria, Silver City is currently at a disadvantage, even compared to communities in Third World African countries.

During the ensuing committee discussion, members asked questions about the methods used to entice families to relocate to rural areas and how that success relates to the availability of infrastructure, particularly the telecommunications infrastructure. The panelists agreed that a key to success is providing access to high-speed broadband for internet. They said that areas where governmental entities can help include rule changes on trenching work so that fiber is emplaced at the same time as pipelines, pole access and rights-of-way processes. It was stated that the cost to run more strands of fiber (144 strands rather than 12) is insignificant in relation to the total cost of laying fiber.

Thursday, August 24

Representative Sweetser reconvened the committee at 9:10 a.m.

Marketing a County for Solar Generation: Obstacles and Benefits

Jessica Etcheverry, community projects director, Luna County, discussed the planning and development of the 25-megawatt Alta Luna Solar Project in Luna County. Luna County officials worked with Tri-State Generation and Transmission Association, Inc., and D. E. Shaw Renewable Investments, LLC, to execute a 25-year contract to supply renewable energy from the Alta Luna Solar Project in Luna County. The project includes 258 acres and 109,239 solar panels. Tri-State Generation and Transmission Association has agreed to purchase the entire

output of the 25-megawatt solar farm over the life of the contract. The facility came online in late 2016 and serves 8,500 homes. (See the handouts in the archives for further information.)

During the ensuing committee discussion, members asked questions about storage facilities, additional projects and the destination of the power. This project did not include storage but was close enough to transmission lines to move the power out to the areas that will be serviced. Luna County will be working on a response to another request for proposals in late October for a 320-megawatt project for El Paso Electric.

There was discussion regarding the cost to the county and the benefits that were derived. Luna County will be paid \$1.5 million over the 25-year life of the project, so the county elected to forego the additional property taxes on the improvements to the land. There were more than 160 jobs during the construction, and an estimated \$400,000 was spent with local vendors during the planning and construction.

These projects are being developed to meet the power companies' requirement for renewable energy. The combination of solar, wind and natural gas plants has allowed companies to provide a level power output while reducing the dependence on coal, without the need for further storage.

The life of the solar project is expected to be between 25 and 30 years, and the solar panels will be replaced with newer technology as it becomes economically effective. The current technology is not affected by the wind storms that are prevalent in the area.

Finding Rural/Plata Studio Makers Lab

Tim B. Castillo, co-founder, Finding Rural/Plata Studio, and associate professor of architecture and associate dean, School of Architecture and Planning, UNM, and Mr. Potts described the Plata Studio as a collaborative effort between UNM, Silver Consolidated School District and Woodbury University to engage students in real-life problems in rural areas. The goal is a "makers lab" with a shared space for inspiration in downtown Silver City. The group has explored arts, music, robotics, fabrication, filmmaking, 3D printing, etc., and has considered developing different spaces ranging from kiosks to mobile laboratory spaces to a building in downtown Silver City.

Through the Plata Studio, these technology resource centers have been planned to train teachers and to provide students in rural school districts with hands-on opportunities in the science, technology, engineering and mathematics (STEM) innovation areas. Through agreements between school districts, these technical resources are shared and available to more teachers and students.

The follow-up questions by committee members were centered around what resources are available and the impacts of those resources on STEM innovations. The resources are still being developed, but there are makers labs in the form of mobile trailers available in the school districts. Sandia National Laboratories provided 800 computers designed for use in AutoCAD applications for the districts, and a grant has been requested to provide printers and other

equipment. Teachers will be trained and provided with the technical resources. It was pointed out that this is just the tip of the iceberg, but the group is creating lofty goals and achieving what is possible with the limited funds available. One member pointed out that graduates may still leave the area for better opportunities, but the goal should be to provide opportunities for those people to return if and when they desire.

Adjournment

There being no further business before the committee, the fourth meeting of the STTC for the 2017 interim adjourned at 10:25 a.m.