

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

**September 1, 2011
Science and Technology Center, University of New Mexico
Albuquerque**

**September 2, 2011
New Mexico Institute of Mining and Technology
Socorro**

The third meeting of the Science, Technology and Telecommunications Committee was called to order at 9:00 a.m. on Thursday, September 1, 2011, in the Science and Technology Center at the University of New Mexico (UNM) by Representative Roberto "Bobby" J. Gonzales, chair.

Present

Rep. Roberto "Bobby" J. Gonzales, Chair
Sen. Stephen H. Fischmann, Vice Chair
Rep. Cathrynn N. Brown
Sen. William F. Burt
Sen. Dede Feldman (Sept. 1)
Rep. Jim W. Hall
Rep. Conrad D. James (Sept. 1)
Sen. Linda M. Lopez
Rep. Debbie A. Rodella
Rep. Nick L. Salazar
Rep. Luciano "Lucky" Varela

Absent

Sen. Phil A. Griego
Sen. Steven P. Neville
Rep. James E. Smith

Advisory Members

Rep. Ray Begaye
Sen. Carlos R. Cisneros
Sen. Richard C. Martinez
Rep. Jane E. Powdrell-Culbert
Rep. Don L. Tripp

Sen. Mark Boitano
Rep. Ben Lujan
Sen. William H. Payne
Rep. Danice Picraux
Sen. John M. Sapien
Rep. Richard D. Vigil

Guest Legislators

Sen. Rod Adair (Sept. 1)
Sen. Nancy Rodriguez (Sept. 2)

(Attendance dates are noted for those members not present for the entire meeting.)

Staff

Gordon Meeks
Ralph Vincent
Jeret Fleetwood

Guests

The guest list is in the original meeting file.

Handouts

Handouts and other written testimony are in the original meeting file.

Thursday, September 1

Members of the committee introduced themselves to the audience.

Chaouki T. Abdallah, interim provost and executive vice president for UNM, welcomed the committee members to UNM and thanked them for coming. He went on to provide members with an overview of some of the programs and research projects under way at the school.

Questions and comments from the committee included:

- trends in graduation rates of engineering students;
- success rates of math and science scholarship recipients;
- science and math degree matriculations for minority students;
- exchange student populations;
- the wisdom of selling the state's supercomputer, especially since only a small percentage of the original cost would likely be recovered; and
- parallel computing capabilities of UNM computers.

Sam Ray, lobbyist for the New Mexico Exchange Carrier Group, provided the committee with a copy of a letter endorsed by the committee during its last meeting regarding concerns over the potentially adverse impact of the Federal Communications Commission's proposed National Broadband Plan, particularly with regard to proposed reductions in the amount of support provided to rural carriers under the Universal Service Fund high-cost support program. He explained that such a reduction could result in large rate increases and possible elimination of services for rural New Mexico customers.

Sustained Research Initiatives

Julie E. Fulghum, vice president for research and economic development at UNM, provided the committee with an overview of some of the research initiatives under way at the school. She began by discussing the Center for High Technology Materials (CHTM), explaining that one of the center's main objectives is to enhance interaction among UNM, the federal laboratories in New Mexico and industries in the state in order help promote economic

development. Ms. Fulghum went on to note that the center focuses on research and education in photonics, microelectronics and nanoscience. She also pointed out that much of the funding for the center comes from the federal government, with a significant portion coming from industry.

Mary Jo Daniel, associate director for the New Mexico Experimental Program to Stimulate Competitive Research (EPSCoR), explained that there is a \$15 million, five-year grant from the National Science Foundation to help increase New Mexico's capacity to become competitive in seeking research funding. She noted that some of the projects the program is involved with include work on climate observation networks and studies on the relationship between acequias and socioeconomics.

Questions and comments from the committee included:

- the value of encouraging schoolchildren to get involved in science and math programs and to seek degrees in those fields;
- ways the legislature can help programs such as the CHTM and EPSCoR;
- that UNM does not have much of a commitment to riskier programs that, although likely to fail, could also turn into massive projects, similar to the way Los Alamos National Laboratory funds such experimental programs;
- difficulty in recruiting and retaining good science and math teachers; and
- the potential return on initial investments in math, science and technology education.

Distance Learning Program

Debby Knotts, director for new media and extended learning at UNM, and John Cornish, director for curriculum planning and program development at UNM, provided the committee with an overview of the distance learning programs available through UNM. They began by noting the dramatic spike in online course enrollment over the past decade and explained what types of students typically enroll in online or distance learning courses. Ms. Knotts and Mr. Cornish also provided the committee with maps showing the geographic disbursement of online course students and graduates. Finally, they detailed the distance learning infrastructure as it currently exists, as well as expansion plans.

Questions and comments from the committee included:

- how online course offerings are chosen and whether those offerings meet the demands of students;
- the availability of two-way communication in some online courses;
- that online courses are available to anyone wishing to enroll in them;
- potential problems with academic fraud in online courses;
- that graduation rates for online course students are good, but should improve over time; and
- that the cost of online courses is relatively inexpensive.

Broadband

Gil Gonzales, chief information officer for UNM, provided the committee with an overview of broadband internet issues. He began by explaining the growing need of the average household for faster internet speeds to carry increasingly larger amounts of data. Mr. Gonzales went on to discuss broadband speeds worldwide, pointing out that the United States ranks only twenty-second in the world in average measured connection speed. He also noted that here in the United States, New Mexico's average connection speed ranks fifth slowest. Mr. Gonzales went on to discuss efforts to make broadband service cheaper and more available in other countries and here in the United States. He also noted that the cost of broadband connectivity, particularly at the high end, is somewhat more expensive in the United States as compared to other countries.

Questions and comments from the committee included:

- the Wired New Mexico Initiative;
- how public institutions in New Mexico tend to have lots of bandwidth, while private individuals and businesses tend to lack bandwidth;
- the use of wireless phone hotspots for internet connectivity;
- whether the legislature can help with negotiations with utility and broadband providers in clearing some of the obstacles in the way of increased broadband availability;
- the increasing importance of having broadband internet connections for households; and
- that spectrum use is also an issue that needs to be resolved.

Sandia National Laboratories Research Highlights

Jerry Simmons, Science, Technology and Engineering Innovations and Partnerships at Sandia National Laboratories (SNL), provided the committee with testimony regarding several of the research projects under way at SNL. He began by providing the committee with an overview of work performed at SNL, explaining that it is a multiprogram laboratory performing research on a vast number of subjects. Mr. Simmons went on to note that one major focus of SNL is new energy technology, and he provided the committee with several examples of advances and products pioneered by SNL. He also discussed SNL's work in national security research, including counterterrorism, infrastructure surety and cybersecurity programs. Mr. Simmons also discussed some of the health care research on which SNL has been working, as well as some of the economic development programs with which SNL is involved.

Questions and comments from the committee included:

- that about 10,000 employees work at SNL;
- while there has been some talk about cutting the budgets at both national laboratories in New Mexico, it is too early to know what will happen;
- levels of assistance provided by SNL for companies deploying new technology developed at SNL;

- that new cancer treatments developed at SNL have not yet been tested on humans;
- the role the legislature can play in ensuring that both national laboratories continue to grow; and
- SNL employees who leave to work on start-up companies returning to work at SNL.

E-911 Legislation

Paul Gutierrez, executive director for the New Mexico Association of Counties (NMAC), provided the committee with testimony regarding legislation that added a surcharge to voice over internet protocol (VOIP) and prepaid wireless phones to be used to help fund the E-911 system in New Mexico. He explained that bills were introduced and passed during the 2011 regular session addressing the issue, but that they were vetoed. Mr. Gutierrez explained that aging equipment at the 52 public safety answering points (PSAPs), where 911 calls are answered, will likely cause increased PSAP downtime and longer repair times if the Enhanced 911 Fund is not maintained or even increased. He also noted that the governor's veto message indicated that now is not the time to raise taxes or fees, but explained that the NMAC is currently working with the Governor's Office to develop legislation that she will sign.

Questions and comments from the committee included:

- the Enhanced 911 Fund supports local and state PSAPs;
- the Enhanced 911 Fund covers the cost of answering emergency calls, but calls to police and emergency vehicle dispatchers are not covered;
- jurisdictional issues between the Rio Arriba County and Santa Fe County PSAPs regarding calls in Espanola, which straddles both counties;
- funding levels for the Enhanced 911 Fund dipped recently, but are beginning to level out; and
- decreasing relevance of traditional landline phones.

The minutes of the July 21, 2011 meeting of the committee were approved as submitted.

Friday, September 2

Dr. Dan Lopez, president of the New Mexico Institute of Mining and Technology (NMIMT), welcomed committee members to the campus and thanked them for coming. He provided the committee with a brief update on operations at the school, noting that faculty cuts have become an issue. Dr. Lopez indicated that as faculty levels continue to drop, accreditation may become a problem. He indicated that state leaders will face some difficult choices in coming years.

Big Science at the NMIMT

Van D. Romero, vice president for research and economic development at NMIMT, provided the committee with testimony regarding several of the ongoing projects at the school. He began with a brief history of some of the work performed by the school during World War II

and afterward, which led to much of the explosives and terrorism research that the school does, particularly at its Playas, New Mexico, facility. Dr. Romero went on to explain that some of the other work done at the school includes:

- tracking asteroids and low-earth orbit objects;
- oil and gas mining research;
- produced water;
- novel metalworking technology;
- infrastructure protection; and
- hydrology.

Dr. Romero also discussed the value of a degree from NMIMT, pointing out that the school is listed among the top 20 Ph.D.-producing schools in the country, and that students from the school can earn significantly higher starting and mid-career salaries as compared to other schools.

Questions and comments from the committee included:

- the loss of some federal money may put some projects in jeopardy;
- that NMIMT is connected to New Mexico's supercomputing facility;
- while New Mexico may no longer need the supercomputer, it is still an extremely useful research tool;
- the number of Ph.D.s from NMIMT currently employed at the two national laboratories in New Mexico;
- the potential of getting potable water from oil and gas fracking fluid; and
- work the school could do to help prevent suicides at the Rio Grande Gorge bridge.

Cybersecurity

Srinivas Mukkamala, senior research scientist for the Institute for Complex Additive Systems Analysis, NMIMT, provided the committee with an overview of the cybersecurity program at NMIMT. He began with a brief history of the program, then discussed how it has grown into both a degree program at the school and a private consulting company. Mr. Mukkamala noted that the company has made about \$2 million from its patents. He also discussed various clients the company has had, noting that they have helped with several major litigation cases in New Mexico. Mr. Mukkamala also pointed out that New Mexico is one of only six states that does not have cybersecurity laws on the books. Finally, he discussed various kinds of cyberattacks, noting the distinction between random and targeted ones.

Questions and comments from the committee included:

- the value of being well-educated and proactive in cybersecurity matters;
- the private company created by Mr. Mukkamala is outperforming competition from larger companies, such as IBM;

- cybersecurity work done for major stock exchanges in the world;
- no legal authority exists to be able to counterattack those who commit cyberattacks;
- the importance of keeping personal information off of smartphones, which are not very secure;
- border security and cybersecurity issues; and
- the difficulty in finding appropriate candidates for cybersecurity degrees and careers.

Staff was also directed to begin developing cybersecurity legislation for the committee to consider endorsing.

Spaceport America Update

Christine Anderson, executive director of the Spaceport Authority, provided the committee with an update on the spaceport. She discussed the spaceport's budget, bond status, future business plan and jobs in and around the spaceport. Ms. Anderson noted the difference between current jobs at the spaceport, which are mostly construction-related, and future ones, which will range from protective services and hospitality to Virgin Galactic operations.

Questions and comments from the committee included:

- who will be in charge of long-term operations at the spaceport is still being resolved;
- New Mexico will continue to own the spaceport property;
- vertical and horizontal launches are planned; and
- the Spaceport Authority Board is appointed by the governor.

There being no further business, the committee adjourned at 1:48 p.m.