

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

**October 24-25, 2011  
Room 307, State Capitol**

The fourth meeting of the Science, Technology and Telecommunications Committee (STTC) was called to order at 10:10 a.m. on Monday, October 24, 2011, in Room 307 of the State Capitol in Santa Fe by Representative Roberto "Bobby" J. Gonzales, chair.

**Present**

Rep. Roberto "Bobby" J. Gonzales, Chair  
Sen. Stephen H. Fischmann, Vice Chair  
Sen. William F. Burt  
Sen. Dede Feldman (Oct. 24)  
Sen. Phil A. Griego  
Rep. Jim W. Hall  
Rep. Conrad D. James  
Sen. Linda M. Lopez  
Sen. Steven P. Neville  
Rep. Debbie A. Rodella  
Rep. Nick L. Salazar  
Rep. Luciano "Lucky" Varela

**Absent**

Rep. Cathrynn N. Brown  
Rep. James E. Smith

**Advisory Members**

Rep. Ray Begaye  
Rep. Ben Lujan (Oct. 25)  
Sen. Richard C. Martinez  
Rep. Danice Picraux  
Rep. Jane E. Powdrell-Culbert  
Rep. Richard D. Vigil (Oct. 25)

Sen. Mark Boitano  
Sen. Carlos R. Cisneros  
Sen. William H. Payne  
Sen. John M. Sapien  
Rep. Don L. Tripp

(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.

## **Monday, October 24**

### **Algal Biofuels**

Dr. Pete Lammers, technical director for the algal bioenergy program at the Energy Research Laboratory for New Mexico State University (NMSU), provided the committee with testimony regarding research that the university has been conducting into the production of diesel fuel from algae. He began by providing the committee with a brief history of the research conducted so far, indicating a significant advantage of using algae over other agricultural products to produce biodiesel in an economically viable manner. Dr. Lammers went on to detail the economics of producing biodiesel from algae, noting that capturing value from all of the components of algae is the key to making it all work. Finally, Dr. Lammers discussed New Mexico's role in biodiesel production from algae, explaining that research shows that New Mexico is well-positioned in terms of available land and sunshine, both critical components in the production process.

Questions and comments from the committee included:

- use of algae byproducts of biodiesel production for animal feed and some water filtration applications;
- potential sites for large-scale algae production;
- patent requirements for the algae to biofuel process;
- international research that might undermine U.S. patents;
- water rights issues and the use of brackish water in algae production;
- potential development of statutes regarding genetically modified organisms; and
- development of a demonstration site to begin training future employees in the biodiesel production industry.

### **Eastern Loop — A Telecommunications Partnership**

Shaun Cooper, NMSU, provided the committee with an overview of the Eastern Loop, a part of the Wire New Mexico project, which is a master plan for communications infrastructure in New Mexico. He explained that the Eastern Loop is actually part of the second phase of the Wire New Mexico project and is being carried out via a partnership among Eastern New Mexico Rural Telephone Cooperative, Baca Valley Telephone, Delcom, New Mexico Institute of Mining and Technology and NMSU. Mr. Cooper went on to note that the partnership involves the exchange of assets and detailed the benefits to each entity involved in the partnership. He went on to acknowledge some of the challenges to the project, particularly regarding ownership and administration of the network and cost-sharing. Mr. Cooper also pointed out that most of the Wire New Mexico project is funded by the federal American Reinvestment and Recovery Act of 2009 (ARRA). Finally, he outlined several areas of the state that will next become part of the network through the project.

Questions and comments from the committee included:

- fiber-optic cable in northeastern New Mexico;
- the impact of increased mobile phone data usage on New Mexico's networks;
- that new homes in New Mexico are sometimes built for connectivity, but not always;
- costs borne by the private sector and the effect on competition among private telecommunications companies;
- microwave technology does not really figure into the Wire New Mexico project;
- border connectivity and national security issues;
- problems with underground fiber-optic lines being inadvertently cut by backhoe operators; and
- connectivity in the west central part of New Mexico.

### **Energy Efficiency Potential for Utilities**

Ken Hughes, clean energy specialist, Energy Conservation and Management Division, Energy, Minerals and Natural Resources Department, provided the committee members with copies of "Energy Efficiency Potential Study for the State of New Mexico", prepared by Global Energy Partners. His division contracted with Global Energy Partners to conduct this statewide study of energy efficiency and demand-response market potential to address utility-level programs in the state. The funding for this project came through the ARRA. The Efficient Use of Energy Act directs New Mexico to support public utilities' development of all cost-effective energy efficiency and load management measures under rules of the Public Regulation Commission (PRC). The various utilities under PRC jurisdiction must obtain PRC approval of energy efficiency programs, implement those programs and report their results and costs. The objectives of this study were to:

- determine the potential for specific energy efficiency measures to reduce the consumption of natural gas and electricity by regions in New Mexico;
- conduct a statewide study of demand-response potential to determine the potential for reduction in peak demand through demand-response programs;
- identify energy efficiency measures that meet the total resource cost test;
- analyze various market penetration rates associated with technical, economic and achievable potential estimates;
- describe and quantify the strategies for implementing those measures in a manner that produces the maximum achievable energy savings;
- run scenarios based on three levels of avoided costs; and
- provide information to the public.

The study found there were nearly one million electricity users in the state in 2009 that consumed 21 trillion watt-hours of electricity. The residential sector, made up of about 850,000 customers, used about 31% of the total; the commercial sector is the largest user, with about eight trillion watt-hours (38% of the total); and the industrial sector's use is almost equivalent to the residential sector. The sum system peak for the entities in the state was about 4,000 megawatts in 2009.

Keven Groenewold, executive vice president and general manager, New Mexico Rural Electric Cooperative Association, provided the committee with testimony regarding energy efficiency from the point of view of rural electric cooperatives. He explained that the Tri-State Generation and Transmission Association has retained a company to help it identify and characterize cost-effective energy efficiency measures, and he discussed several of those potential measures and the energy savings they might yield.

Ron Darnell, vice president for regulatory affairs, Public Service Company of New Mexico (PNM), also discussed energy efficiency for utilities. He began by providing the committee with an overview of PNM's various energy efficiency programs. Mr. Darnell also discussed the Efficient Use of Energy Act, which established minimum program targets for utilities. He noted that PNM is on target to meet the 2014 goal, but he cautioned that continued targets will be more difficult to meet. For example, Mr. Darnell noted that there is little long-term certainty since passage of the Efficient Use of Energy Act, as well as little support for structural changes, such as rate decoupling, that would help utility companies keep energy efficiency programs cost-effective.

Neil Cowan, Xcel Energy, also discussed energy efficiency. He began by providing the committee with an overview of Xcel Energy's residential and business energy efficiency programs. Mr. Cowan went on to show the committee the steadily increasing energy savings required by the Efficient Use of Energy Act versus projections of what Xcel Energy will likely be able to achieve. He also noted that Xcel Energy has begun a study to verify the company's ability to achieve the goals laid out in the Efficient Use of Energy Act and to provide cost estimates for future planning.

Questions and comments from the committee included:

- the difficulty that energy consumers have in understanding the basics of energy efficiency and how it may, or may not, save them money;
- long-term benefits of energy efficiency are significant, but initial costs to utility companies are, too;
- utility bills seem difficult to read for the average consumer;
- utility company and electric cooperative payment of governmental gross receipts taxes; and
- why utility companies want consumers to pay for their lost sales.

### **Unmanned Aerial Vehicle Program**

Doug Davis, deputy director, Technical Analysis and Applications Center, NMSU, provided the committee with testimony regarding NMSU's Physical Science Laboratory (PSL) and its mission and history. He explained that the laboratory was established in 1946 to support missile testing of V-2 rockets and that it continues to conduct multidisciplined aerospace and defense-oriented scientific and technical research. Mr. Davis noted that one of the main goals for the PSL is to become a global center of influence for unmanned aircraft operations and technology, and he discussed some of the unmanned aircraft work that the PSL is doing. He

noted that unmanned aircraft includes both scientific balloons as well as other unmanned aircraft systems (UAS) and that NMSU has developed a flight test center (FTC) for UAS, which enables manufacturers, government agencies and other users to conduct operations as public aircraft. Mr. Davis explained that the FTC is adjacent to White Sands Missile Range's core airspace and offers a number of desirable features, such as available airspace, good weather and U.S. Air Force air traffic control from surface to space. He also discussed some of the past and present projects that the FTC has hosted and his vision for continuing to improve the FTC to make it the premier facility for unmanned aerial vehicles.

Questions and comments from the committee included:

- increased support from local, state and federal government entities would be helpful in improving the FTC's chances of continuing to improve;
- agreements with companies allow them to set up temporary hangars in remote areas of the FTC to keep proprietary information and designs private;
- issues related to municipal ownership of most area airports can be resolved;
- significant amounts of state and Bureau of Land Management land near the FTC constitute another potential advantage that the FTC enjoys;
- the New Mexico congressional delegation is generally supportive of the FTC, but it does not seem to be a priority for the delegation;
- the importance of the federal Department of Defense and testing unmanned aerial vehicles to the economy of southern New Mexico; and
- initial difficulties faced by the spaceport were eventually overcome.

The committee directed staff to prepare letters to the New Mexico congressional delegation and Commissioner of Public Lands Ray Powell urging them to support the FTC.

The committee also directed staff to draft a memorial supporting the FTC.

On a motion made, seconded and approved, the minutes of the STTC's September 1-2, 2011 meeting were approved as submitted.

## **Tuesday, October 25**

### **Australia Smart Grid Video**

Representative Gonzales presented a video that he came across at the Council of State Governments-West conference earlier in the year. The video discussed broadband and smart grid issues in Australia and showed how increased broadband connectivity could improve the home and professional lives of each member of an Australian household.

### **University of New Mexico (UNM) Health Sciences Center Research**

Dr. Richard S. Larson, UNM Health Sciences Center, provided the committee with testimony regarding the research mission at UNM's medical school. He explained that his vision is to create a research enterprise that accelerates the process from basic discovery to application

in medical health care practice. Dr. Larson went on to note that the university has already created signature programs in:

- brain and behavioral illnesses;
- cardiovascular and metabolic diseases;
- infectious diseases and immunity;
- environmental health sciences;
- child health research; and
- cancer.

Dr. Larson also discussed clinical and intervention trials, which bring the latest treatments and technologies to New Mexico, and listed several trials in which the university had taken part. He also talked about the importance of community engagement and research, noting that increasing knowledge and coordination in the community will increase access to health care and likely lead to significant scientific advances.

Next, Dr. Larson discussed pilot funding for programs, which he explained is the primary mechanism for obtaining federal support. He also pointed out that pilot funding returns between \$8.00 and \$20.00 for every \$1.00 invested. However, Dr. Larson acknowledged that state funding has become increasingly scarce over the last decade, noting that core programs have been forced to absorb continued budget cuts.

Questions and comments from the committee included:

- gene evaluation technology can be used to detect illnesses in children, but it also poses some ethical questions;
- clinical trials seem to have produced some drugs that, although well-intentioned, produce significant and problematic side effects;
- whether anything can be done once abnormal or problematic genes have been detected;
- values and difficulties of public-private partnerships;
- finding a niche is one key to obtaining a competitive advantage for research funding; and
- privacy issues associated with medicines and their side effects.

### **Science and Technology Education**

Dr. Karin Wilburg, associate dean for research, College of Education, NMSU, and Dr. Susan Brown, director of the STEM Outreach Center, College of Education, NMSU, provided the committee with testimony regarding science and technology education in New Mexico. They began by explaining that STEM is defined as the development of strong science and mathematics knowledge and skills that students learn using engineering and technology as a tool for learning and communication. Dr. Wilburg and Dr. Brown went on to note that the percentage of STEM degrees awarded in the United States has been steadily decreasing while also being outpaced by several other countries. They also discussed why STEM degrees are so important,

suggesting that the country's future economic well-being depends on youth trained to work in the twenty-first century. Dr. Wilburg and Dr. Brown then discussed a number of reasons for the decline in STEM degrees and outlined a number of programs in New Mexico schools that appear to encourage students at all levels to pursue STEM education.

Questions and comments from the committee included:

- that teachers play a key role in helping students get excited about STEM education;
- the retention of STEM teachers is just as troubling an issue as the recruitment of them;
- the importance of STEM education for all students at all educational levels;
- the importance of parental support;
- the difficulty teachers seem to have in finding time to work with students on basic science and math skills;
- the tendency of teachers to teach for test results, as opposed to basic skills development; and
- the need for an overall paradigm shift in education.

### **Los Alamos National Laboratory (LANL) Overview**

Charles McMillan, director, LANL, provided the committee with an update regarding laboratory functions and answers to specific questions posed by committee members at an earlier meeting. He talked about his personal background and went on to discuss some of the work that LANL has conducted over the last year, as well as some of the challenges faced there. Mr. McMillan also provided the committee with some demographic data regarding the laboratory's work force. He also discussed the chemistry and metallurgy research replacement (CMRR) program, which he explained continues LANL's nuclear security missions through analytical chemistry and materials characterization of elements such as plutonium and uranium. Mr. McMillan pointed out that the CMRR program is not a pit-manufacturing (nuclear weapons components) facility.

Mr. McMillan went on to discuss LANL's impact on the northern New Mexico economy, pointing out that the laboratory is exceeding its goals in terms of doing business with local companies whenever possible. He also pointed out that the CMRR program will provide an economic boost to the area, first through construction jobs and later through the purchase of goods and services. Mr. McMillan pointed out that LANL is actually the sixth largest employer in New Mexico.

Next, Mr. McMillan discussed LANL's work force. He explained that the laboratory is working to build a diverse work force and noted that the Onramp and Protege programs provide an avenue from entry-level to management positions at the laboratory. Finally, Mr. McMillan discussed the future of LANL, noting that the laboratory will continue to deliver excellence through science and will compete for talent on a worldwide stage. He also said that LANL will work to build an environment that fosters creativity.

Questions and comments from the committee included:

- although New Mexican students are better educated today, LANL does not hire as many New Mexicans as it should;
- the number of degrees among employees at the laboratory includes some employees who hold multiple degrees;
- specific numbers for enrollment in the Onramp program;
- small business procurement practices;
- the total budget for LANL is \$2.3 billion;
- the possibility of ethnic clusters in pay scales at LANL;
- LANL must compete with other elite organizations and even other countries for employees;
- the focus of the laboratory should be on world-class science and facilities;
- the importance of the CMRR facility to LANL's growth;
- the improvement that LANL has made in its hiring and promotion practices;
- that LANL success is critical to the success of the United States;
- critics of the CMRR program may not fully understand its mission;
- the LANL is trying to meet with community leaders to help explain the CMRR program; and
- the status of environmental cleanup at LANL.

There being no further business, the committee adjourned at 3:00 p.m.