SCIENCE, TECHNOLOGY AND TELECOMMUNICATIONS COMMITTEE

REPORT
to the
FIFTY-FIRST LEGISLATURE

December 2013
Legislative Council Service

SUMMARY

Science, Technology and Telecommunications Committee Summary

During the 2013 interim the Science, Technology and Telecommunications Committee (STTC) set out to find solutions to issues in emerging technologies, communications infrastructure, information technology and technology transfer. The STTC sought to study how innovative technologies can create opportunities for the state in areas such as water reuse, energy, energy storage, education and agriculture.

The interim began and ended with the STTC hearing from the Department of Information Technology (DOIT) on its operations and projects, which include the testing of a public safety broadband system, security concerns and disaster recovery requirements for state agencies. The STTC expressed concern over non-responsiveness from the DOIT to its requests, over the SHARE accounting system difficulties and over the Information Technology Commission's membership not being filled after over a year's time. The STTC also reviewed the DOIT's accomplishments, goals and challenges as a department.

A range of topics were considered and discussed by the STTC, including regulations and disparities in regulation of communications carriers in the state and local exchange carrier competition, the importance of fiber communications given the growth of global data traffic, the possibility of New Mexico as a center for small satellite development in space technology and exploration, keeping the state competitive in the commercial space industry, renewable energy infrastructure opportunities in geothermal energy, photovoltaic and solar energy exploration, means of conserving water and creating methods to ensure an adequate water supply through the Alamogordo desalination project, irrigation efficiency research, a broadband program for the state, an overview of the cable industry, a forest restoration technology initiative and a review of the activities in the southeast New Mexico nuclear corridor.

The STTC also heard testimony on Los Alamos National Laboratory (LANL) that included a status report on its cleanup and ground water protection efforts. The importance of stability in LANL's work force, in collaboration among the private sector and research institutions and in the need to recruit and retain local talent and the educational efforts to help this cause, were considered. Technology transfer and economic development were looked at, too, as well as the need to create research districts in the state to increase support between science institutions and technology businesses. The idea of scaling up public-private partnerships and creating a core collaborative model to make New Mexico a solid technological research community was also discussed.

The STTC toured LANL's Area G and Technical Area 54, as well as the site of the transuranic waste facility. It also toured the impressive Center for High Technology Materials at the University of New Mexico's Research Park, which is a nationally recognized center for phototonics and microelectronics research.

Renewable energy storage policies and regulations were reviewed alongside a consideration of New Mexico's market for energy storage and an assessment that the state needs to have a strong power distribution system in place to become a major exporter of energy resources.

The STTC did not endorse any legislation but had much discussion over a telecommunications reform bill that, although it purported to create retail parity, ended up causing more concern among small rural telecommunications carriers over the need for disparate regulatory treatment and the STTC's concern over the possible risk to customers in rural areas.

WORK PLAN AND MEETING SCHEDULE

2013 APPROVED
WORK PLAN AND MEETING SCHEDULE
for the
SCIENCE, TECHNOLOGY AND TELECOMMUNICATIONS COMMITTEE

Members

Rep. Carl Trujillo, Chair
Sen. Michael Padilla, Vice Chair
Sen. William F. Burt
Rep. Kelly K. Fajardo
Rep. Roberto "Bobby" J. Gonzales
Rep. Jason C. Harper
Sen. Linda M. Lopez
Sen. Bill B. O'Neill
Rep. Debbie A. Rodella
Sen. John C. Ryan
Rep. James E. Smith
Rep. Luciano "Lucky" Varela
Rep. Monica Youngblood

Advisory Members

Sen. Carlos R. Cisneros
Rep. Stephen Easley
Rep. Stephanie Garcia Richard
Sen. Ron Griggs
Sen. Timothy M. Keller
Sen. Richard C. Martinez
Rep. Bill McCamley
Sen. Steven P. Neville
Sen. William H. Payne
Rep. Jane E. Powdrell-Culbert
Rep. Nick L. Salazar
Rep. Don L. Tripp
Sen. Peter Wirth

Work Plan

The Science, Technology and Telecommunications Committee was created by the New Mexico Legislative Council on April 30, 2013. The Science, Technology and Telecommunications Committee's main focus during the 2013 interim process is to find solutions that lead to legislative action in emerging technologies, communication infrastructure, information technology (IT) and technology transfer. The committee will study opportunities, through the use of innovative technologies, for New Mexico in the areas of water reuse, energy, energy storage, education and agriculture. The intention of the committee is not to receive promotional presentations, but, rather, to understand how the legislature can promote new and existing ideas to create a positive impact on New Mexicans' lives, to find opportunities that enhance New Mexico universities, to take advantage of the strengths of the national laboratories and, finally, to foster an environment for technology transfer and job creation.

During the 2013 interim, topics for meeting agendas will include:

(1) Department of Information Technology program responsibilities over SHARE upgrades, the unemployment insurance system, the State Land Office's ONGARD system, the Motor Vehicle Division of the Taxation and Revenue Department system status, the Human Services Department's ASPEN system, the state's supercomputer and the Information Technology Commission;

(2) REDI Net (current status and right-of-way issues);
(3) advanced water treatment systems for domestic and municipal uses, including

reuse or recycling of water;

(4) telecommunications issues, including broadband deployment in rural areas and smart regulation;

(5) telecommunications for the hearing impaired;

(6) centers of excellence and innovation (creating top programs at New Mexico universities that match the direction of the national laboratories, governor's chairs);

(7) energy storage (report from the Energy, Minerals and Natural Resources Department);

(8) geothermal, solar and wind infrastructure opportunities;

(9) research and education in institutes of higher education and K-12 (science, technology, engineering and mathematics (STEM) fields);

(10) agriculture technology advances;

(11) public/private partnerships for technology transfer;

(12) obstacles to technology transfer from research to commercialization (venture capital and lending);

(13) innovations with natural gas;

(14) federal funds to telecommunications carriers;

(15) status of the spaceport;

(16) use of energy produced in New Mexico;

(17) investments in timber extraction and processing;

(18) technology improvements in agricultural water use, including drip irrigation;

(19) business incubators for technology transfer;

(20) State Investment Council investments in technology;

(21) New Mexico Finance Authority investments in the Jicarilla Apache water system;

(22) New Mexico Renewable Energy Transmission Authority status;

(23) Alamogordo national desalination research facility;

(24) tax incentives for technology transfer;

(25) New Mexico Health Insurance Exchange IT status; and

(26) telemedicine.

Science, Technology and Telecommunications Committee
2013 Approved Meeting Schedule

Date	Location
June 7	Santa Fe
July 17-18*	Los Alamos
September 5-6	Albuquerque
October 17-18	Las Cruces
November 18-19	Santa Fe

*Joint meeting with the Radioactive and Hazardous Materials Committee.

AGENDAS

TENTATIVE AGENDA
for the
FIRST MEETING
of the
SCIENCE, TECHNOLOGY AND TELECOMMUNICATIONS COMMITTEE

June 7, 2013
Room 307, State Capitol

Friday, June 7

10:00 a.m.		**Call to Order and Introductions** —Representative Carl Trujillo, Chair
10:10 a.m.	(1)	**Interim Committee Procedures** —Raúl E. Burciaga, Director, Legislative Council Service
10:30 a.m.	(2)	**Telecommunications Regulation** —Pat Lyons, Public Regulation Commissioner
11:30 a.m.		**Lunch**
1:00 p.m.	(3)	**2013 Interim Work Plan and Meeting Schedule**
1:30 p.m.	(4)	**Department of Information Technology (DOIT) Update** —Darryl Ackley, Secretary, DOIT
2:30 p.m.		**Adjourn**

Revised: July 11, 2013

TENTATIVE AGENDA
for the
SECOND MEETING
of the
RADIOACTIVE AND HAZARDOUS MATERIALS COMMITTEE
and
SCIENCE, TECHNOLOGY AND TELECOMMUNICATIONS COMMITTEE

July 17-18, 2013
Fuller Lodge, 2132 Central Avenue
Los Alamos

Wednesday, July 17

10:00 a.m. **Call to Order and Introductions**
—Senator Peter Wirth, Chair, Radioactive and Hazardous Materials Committee (RHMC)
—Representative Carl Trujillo, Chair, Science, Technology and Telecommunications Committee (STTC)

10:10 a.m. (1) **Welcome and Los Alamos National Laboratory (LANL) Overview**
—Richard Marquez, Executive Director, LANL

11:00 a.m. (2) **Laboratory Science Overview**
—Duncan McBranch, Chief Technology Officer, LANL

12:00 noon **Lunch**

1:00 p.m. (3) **LANL Community Program Overview**
—Kurt Steinhaus, Director, Community Programs Office, LANL

2:00 p.m. (4) **LANL Cleanup Status**
—Jeff Mousseau, Associate Director for Environment Programs, LANL
—Pete Maggiore, Assistant Manager, Environment Projects Office, LANL
—Ryan Flynn, Secretary-Designate of Environment
—DeAnza Sapien, Executive Director, Regional Coalition of LANL Communities

3:30 p.m. (5) **Regional Economic Development Initiative (REDI Net)**
—Laura Gonzales, Northern New Mexico Coordinator, REDI Net

4:30 p.m. **Adjourn**

Thursday, July 18

For security reasons, LANL will be providing an invitation-only tour for RHMC and STTC legislators and legislative staff. No committee or legislative business will take place during the tour.

Revised: August 30, 2013

TENTATIVE AGENDA
for the
THIRD MEETING
of the
SCIENCE, TECHNOLOGY AND TELECOMMUNICATIONS COMMITTEE

September 5-6, 2013
Rotunda Room, UNM Science Technology Park
801 University Boulevard
Albuquerque

Thursday, September 5

10:00 a.m. **Call to Order and Introductions**
—Representative Carl Trujillo, Chair

10:10 a.m. **Welcome to the University of New Mexico (UNM)**
—Catalin Roman, Dean, School of Engineering, UNM

10:30 a.m. (1) **Technology Transfer Issues**
—Elizabeth (Lisa) J. Kuuttila, Chief Executive Officer and Chief Economic Development Officer, STC.UNM
—Fred Mondragon
—Dr. Daniel H. Lopez, President, New Mexico Institute of Mining and Technology

12:00 noon **Working Lunch**

(2) **Telehealth**
—Dr. Dale Alverson, Medical Director, Center for Telehealth and Cybermedicine Research, UNM

1:00 p.m. (3) **Centers of Research Excellence**
—Dr. Michael Dougher, Senior Vice Provost for Academic Affairs, UNM

2:00 p.m. (4) **Telecommunications Regulation**
—Leo Baca, CenturyLink
—Jeff Lindsey, Regional Vice President of Public Policy, CenturyLink

2:30 p.m. **Recess**

Sandia National Laboratories Tour (Committee Members and Staff Only)

Depart UNM and Drive to Sandia National Laboratories

3:00 p.m. **Welcome and Overview**

3:30 p.m. **Microsystems and Engineering Sciences Applications (MESA) Tour**

4:30 p.m. **Integrated Technologies and Systems Exhibit**

5:30 p.m. **Depart Sandia National Laboratories**

Friday, September 6

9:00 a.m. (5) **Venture Space**
—Chris Hall, Ph.D., Chair and Professor, School of Engineering, Mechanical Engineering Department, UNM

10:00 a.m. (6) **Science, Technology, Engineering and Math Education**
—Dr. Vanessa Svihla, Co-Director, Interaction and Interdisciplinary in Educational Activity, College of Education, UNM
—Dr. Richard Bryant, College of Education, UNM

11:00 a.m. **Public Comment**

11:30 a.m. **Center of High-Technology Materials (Nanotechnology) Tour**

2:00 p.m. **Adjourn**

Revised: October 10, 2013

TENTATIVE AGENDA
for the
FOURTH MEETING
of the
SCIENCE, TECHNOLOGY AND TELECOMMUNICATIONS COMMITTEE

October 17-18, 2013
Wooton Hall
2995 Knox Street
New Mexico State University
Las Cruces

Thursday, October 17

10:00 a.m. **Call to Order and Introductions**
—Representative Carl Trujillo, Chair

10:10 a.m. (1) **Welcome and Update on Issues of Interest to New Mexico State University (NMSU)**
—Dr. Garrey Carruthers, Ph.D., President, NMSU

11:30 a.m. (2) **Working Lunch**
—Reduced Gravity Biometrics Laboratory, Jett Hall, NMSU

1:00 p.m. (3) **Spaceport America Status Report**
—Christine Anderson, Executive Director, Spaceport Authority

2:00 p.m. (4) **Renewable Energy Infrastructure Opportunities**
—Jim Witcher, Witcher and Associates
—Andy Rosenthal, Southwest Technology Development Institute, NMSU

3:00 p.m. (5) **Alamogordo Desalination**
—Matt McNeile, City Manager, City of Alamogordo
—Dr. Sam Fernald, Ph.D., Director, New Mexico Water Resources Research Institute, NMSU

4:00 p.m. (6) **Experimental Program to Stimulate Competitive Research**
—Mary Jo Daniel, Associate Director, New Mexico Program to Stimulate Competitive Research
—Peter J. Lammers, Algal Bioenergy Program, NMSU

5:00 p.m. **Recess**

Friday, October 18

9:00 a.m. (7) **Telecommunications Regulation**
—Sandra Skogen, Office of the General Counsel, Public Regulation Commission (PRC)
—Mike Ripperger, Telecommunications Bureau Chief, PRC

11:00 a.m. (8) **Agriculture Technology Advances/Technology Improvements in Agricultural Water Use**
—Dr. Sam Fernald, Ph.D., Director, New Mexico Water Resources Research Institute, NMSU
—Dr. Phil King, Ph.D., P.E., Professor/Associate Department Head, Department of Civil Engineering, NMSU
—Dickie Salopek, Pecan Farmer, Dona Ana County

12:00 noon **Public Comment**

12:30 p.m. **Adjourn**

Revised: November 15, 2013

TENTATIVE AGENDA
for the
FIFTH MEETING
of the
SCIENCE, TECHNOLOGY AND TELECOMMUNICATIONS COMMITTEE

November 18-19, 2013
Room 322, State Capitol

Monday, November 18

10:00 a.m. **Call to Order and Introductions**
—Representative Carl Trujillo, Chair

10:10 a.m. (1) **Telecommunications Reform**
—Leo Baca, Director of State Legislative Affairs, CenturyLink
—Sam Ray, New Mexico Exchange Carrier Group
—Charlie Ferrell, New Mexico Exchange Carrier Group
—Jerry Fuentes, AT&T
—Carol Clifford, Attorney for twtelecom, inc.

11:00 a.m. (2) **Energy Storage Task Force**
—Jeremy Lewis, State Energy Program Manager, Energy, Minerals and Natural Resources Department

12:00 noon **Lunch**

1:30 p.m. (3) **New Mexico Renewable Energy Transmission Authority (NMRETA) Status Report**
—Jeremy Turner, Executive Director, NMRETA

2:30 p.m. (4) **State Investment Council Technology Investments in New Mexico**
—Steven K. Moise, State Investment Officer
—Brian Birk, Managing Partner, Sun Mountain Capital

3:30 p.m. (5) **New Mexico Broadband Overview**
—Gar Clarke, Broadband Program Manager, Department of Information Technology

4:30 p.m. (6) **Think New Mexico Jobs Initiative**
—Fred Nathan, Director, Think New Mexico

5:00 p.m. **Recess**

Tuesday, November 19

9:00 a.m. (7) **Cable Industry Overview**
—Susan Bitter Smith, Executive Director, Southwest Cable Communications Association
—Chris Dunkeson, General Manager, Comcast
—Jane Shanley, General Manager, Cable ONE

10:00 a.m. (8) **Southeast New Mexico Nuclear Corridor**
—John A. Heaton

11:00 a.m. (9) **Gateway Technology for Restoring Forests**
—Margo Covington, Executive Director, Sustainable Communities/ZERI-NM
—Douglas Webb, Sustainable Communities/ZERI-NM
—Breece Robertson, Trust for Public Land

12:00 noon **Lunch**

1:30 p.m. (10) **Joint Meeting with the Legislative Finance Committee on the Department of Information Technology (Room 307)**

5:00 p.m. **Adjourn**

MINUTES

MINUTES
of the
FIRST MEETING
of the
SCIENCE, TECHNOLOGY AND TELECOMMUNICATIONS COMMITTEE

June 7, 2013
State Capitol, Room 307
Santa Fe

The first meeting of the Science, Technology and Telecommunications Committee (STTC) was called to order by Representative Carl Trujillo, chair, on June 7, 2013 at 10:10 a.m. in Room 307 of the State Capitol.

Present
Rep. Carl Trujillo, Chair
Sen. Michael Padilla, Vice Chair
Sen. William F. Burt
Rep. Kelly K. Fajardo
Rep. Roberto "Bobby" J. Gonzales
Rep. Jason C. Harper
Sen. Linda M. Lopez
Sen. Bill B. O'Neill
Rep. Debbie A. Rodella
Rep. James E. Smith
Rep. Luciano "Lucky" Varela
Rep. Monica Youngblood

Absent
Sen. John C. Ryan

Advisory Members
Sen. Carlos R. Cisneros
Rep. Stephen Easley
Rep. Stephanie Garcia Richard
Sen. Ron Griggs
Sen. Timothy M. Keller
Sen. Richard C. Martinez
Rep. Bill McCamley
Rep. Jane E. Powdrell-Culbert
Rep. Nick L. Salazar
Sen. Steven P. Neville
Sen. William H. Payne
Rep. Don L. Tripp
Sen. Peter Wirth

Guest Legislator
Sen. Nancy Rodriguez

Staff
Gordon Meeks
Ralph Vincent
Cassandra Jones

Guests

The guest list is in the meeting file.

Handouts

Handouts and written testimony are in the meeting file.

Friday, June 7

Members of the committee introduced themselves.

Interim Committee Procedures

Raúl E. Burciaga, director of the Legislative Council Service (LCS), provided the committee with an overview of interim committee protocols. He referred the committee to a tentative interim committee calendar created by the LCS.

Mr. Burciaga told the committee that:

- the committee is bound by a "blocking provision", which states that no action shall be taken by the committee if a majority of the total membership from either house rejects the action;
- advisory members are nonvoting members of the committee;
- some action can be done by consensus, but formal action, such as endorsing legislation or issuing a letter reflecting the committee's opinion, should be done upon a motion and a vote of the voting members with a quorum present;
- votes can be done by voice, by a show of hands or by the chair asking whether there is any objection to the motion;
- a quorum consists of a majority of the voting members of the committee;
- a committee can meet under certain conditions without a quorum present and take testimony, but it cannot take any formal action; and
- committees must meet in the State Capitol after September 30, unless specifically approved to do otherwise by the New Mexico Legislative Council.

Telecommunications Regulation

Patrick H. Lyons, commissioner, Public Regulation Commission (PRC), gave a presentation to the committee regarding regulation of telecommunications systems. He told the committee that the mission of the PRC is affordability, reliability and protecting the public interest. The PRC strives for universal service at affordable rates. Mr. Lyons explained to the committee that the PRC does not have the authority to regulate television or internet services. The commissioner also reminded the committee that the PRC has jurisdiction over phone service but not internet service, even if both services are provided through the same line. He stated that in the past, the legislature has supported the relaxation of regulation when competition can be shown, particularly regarding local exchange carriers. Mr. Lyons referred the committee to a handout that compared the varying regulations of telecommunications carriers in the state. Telecommunications carriers are divided into three different classifications: (1) those that have

fewer than 50,000 lines in a state; (2) those that have 50,000 to 375,000 lines in a state; and (3) those that have more than 375,000 lines. Mr. Lyons told the committee that CenturyLink is the only carrier with more than 375,000 lines in New Mexico.

Mr. Lyons noted that CenturyLink has filed a case with the PRC. The PRC is in the process of determining whether or not sufficient competition exists to loosen CenturyLink regulations. The commissioner told the committee that the case is ongoing and that he cannot discuss it in any detail.

The commissioner also noted that the PRC is in the process of implementing House Bill 58, which becomes effective July 1, 2013 and affects the statutory duties of the PRC.

Members of the committee requested that the PRC be put on a future agenda to update the committee.

Members of the committee asked questions and discussed:

- disparities in regulation;
- reasonable price caps;
- competition between local exchange carriers;
- competition with local exchange carriers that are not under PRC purview;
- internet phone service; and
- instances where state law is superseded by federal law.

2013 Interim Work Plan and Meeting Schedule

Representative Trujillo referred the committee to the proposed work plan and asked for input regarding work plan topics and potential meeting dates. Members of the committee emphasized that the work plan should include certain statewide information technology systems. Members of the committee expressed concern about the failure of the Information Technology Commission to meet and suggested that the committee continue to be aware of the commission's progress. Committee members reviewed the work plan and discussed meeting dates. The committee decided to move forward with the proposed work plan, which was amended to include a few additional items, as well as the proposed meeting dates.

Department of Information Technology (DOIT) Update

Darryl Ackley, secretary of information technology, provided the committee with an overview of the DOIT and a status report on its current activities. Secretary Ackley told the committee that the DOIT provides email, mainframe, radio, telephone, wireless, security and hosting services, as well as a number of other services, to state agencies. The department provides oversight, compliance and strategic information technology planning guidance to executive agencies and is 99% revenue funded. The DOIT operates a primary data center and more than 100 radio tower sites throughout the state. Secretary Ackley discussed recent accomplishments of the DOIT, including an overhaul of billing systems, oversight of projects, complying with narrowbanding, an unfunded Federal Communications Commission mandate, modernization of the mainframe and numerous infrastructure improvements throughout the state.

Secretary Ackley told the committee that the DOIT is currently in the process of upgrading the Statewide Human Resources Accounting and Management Reporting System (SHARE), implementing various pieces of legislation and preparing for meetings of the Information Technology Commission. Secretary Ackley highlighted a program that the DOIT is undertaking to test a public safety broadband system. The DOIT is expecting to receive $1.9 million in July from the federal State and Local Implementation Grant Program for the project.

Members of the committee asked questions and discussed:

- land-mobile radio;
- indefeasible right of use for an argon fiber managed by the DOIT, the University of New Mexico and the New Mexico Institute of Mining and Technology;
- public safety broadband;
- the Information Technology Commission, including a potential June 17 meeting date with appointed members;
- the management of DOIT projects;
- specific projects, including the Automated System Program and Eligibility Network (ASPEN); SHARE; the Oil and Natural Gas Administration and Revenue Database (ONGARD); and the Unemployment Insurance Tax & Claims System (uFacts);
- DOIT appropriations, including appropriations for 26 new projects that are being managed and implemented by the department;
- security concerns, including off-site management, the location of site backup in the Tiwa Building in Albuquerque and a memorandum of understanding with the Property Control Division of the General Services Department to evaluate the space;
- disaster recovery requirements for various state agencies; and
- DOIT personnel and vacancies.

Members requested that the DOIT be put on the agenda for a future meeting to address some concerns expressed by committee members. Committee members also requested that the DOIT provide them with a matrix of all current projects that includes pertinent information. Secretary Ackley referred the committee to a link on the DOIT web site with some project information, and he assured the committee members that he would provide them with more detailed information.

Adjournment

There being no further business before the committee, the first meeting of the STTC for the 2013 interim adjourned at 3:17 p.m.

MINUTES
of the
JOINT MEETING
of the
RADIOACTIVE AND HAZARDOUS MATERIALS COMMITTEE
and
SCIENCE, TECHNOLOGY AND TELECOMMUNICATIONS COMMITTEE

July 17-18, 2013
Fuller Lodge, Los Alamos

The joint meeting of the Radioactive and Hazardous Materials Committee (RHMC) and the Science, Technology and Telecommunications Committee (STTC) was called to order by Senator Peter Wirth, chair of the RHMC, on Wednesday, July 17, at the Fuller Lodge in Los Alamos.

STTC Attendance

Present	**Absent**
Rep. Carl Trujillo, Chair	Sen. Michael Padilla, Vice Chair
Sen. William F. Burt	Sen. John C. Ryan
Rep. Kelly K. Fajardo	Rep. James E. Smith
Rep. Roberto "Bobby" J. Gonzales	Rep. Luciano "Lucky" Varela
Rep. Jason C. Harper	
Sen. Linda M. Lopez (7/17)	
Sen. Bill B. O'Neill	
Rep. Debbie A. Rodella	
Rep. Monica Youngblood	

Advisory Members	
Rep. Stephanie Garcia Richard (7/17)	Sen. Carlos R. Cisneros
Sen. Ron Griggs	Rep. Stephen Easley
Sen. Richard C. Martinez (7/17)	Sen. Timothy M. Keller
Rep. Jane E. Powdrell-Culbert	Rep. Bill McCamley
Rep. Nick L. Salazar (7/17)	Sen. Steven P. Neville
Sen. Peter Wirth	Sen. William H. Payne
	Rep. Don L. Tripp

Guest Legislator
Rep. Tim D. Lewis

(Attendance dates are noted for members not present for the entire meeting. RHMC attendance is noted on that committee's minutes.)

Staff
Gordon Meeks, Legislative Council Service (LCS)
Renée Gregorio, LCS
Cassandra Jones, LCS

Wednesday, July 17

Welcome and Los Alamos National Laboratory (LANL) Overview

Senator Wirth handed the gavel over to Representative Garcia Richard after member introductions, and she and Representative Carl Trujillo, chair of the STTC, shared the lead. Representative Trujillo introduced Jeff Rogers, chair of the Los Alamos County Council, who was joined by other councilors in attendance. Mr. Rogers welcomed the committees to Los Alamos, stating that some of the greatest minds have gathered here in the spirit of honest debate and stressing that issues that the committees would be discussing impact the community greatly, especially the collaboration among the federal, state and local governments on cleanup issues at LANL.

Richard Marquez, executive director, LANL, invited the committees to LANL's seventieth anniversary activities in the following week. He mentioned what a fascinating place that LANL is, attracting talented scientists, engineers and safety and procurement personnel to work at the lab. He spoke of the institution's significant history and rich interaction and synergy with northern New Mexico. He added that as a large employer in the northern part of the state, LANL management is attuned to its responsibility of corporate citizenship and being a good neighbor.

Mr. Marquez highlighted the work of his LANL colleagues by saying that Duncan McBranch, as chief technology officer, will make a presentation on the need for collaboration among private sector and research institutions in the current challenging fiscal climate. He spoke of Kurt Steinhaus as earnest and sincere, with a passion for education. He also alluded to Jeff Mousseau's work in environmental management, which includes stellar performance metrics and a strong safety record. He then discussed the importance of stability, especially in regard to attracting and retaining LANL's top-notch work force during this time of economic downturn. He offered that legislative support really assists LANL in its mission. He specified that in the last two fiscal years, there has been a decline in revenue from $2.5 billion to $2.1 billion and that the impact has largely fallen on northern New Mexico. LANL had to cut 1,300 positions, and procurements were cut from $1 billion to $600 million. He emphasized their strong management is a big asset as well as the work of a council that meets biweekly to process all buying actions.

As far as fiscal year 2014 goes, Mr. Marquez indicated that thus far projections show either a decline of another $150 million or an increase of up to $300 million. He said that LANL's funding is largely from either the federal Department of Energy (DOE) or the National Nuclear Security Administration (NNSA). He said that procurement dropped to $650 million in 2012 and that 2013 would show another decline.

In April 2012, LANL provided incentives to employees to leave work at LANL, which hundreds did. Another 700 positions were lost. He added that the current management team has no plans to reduce the work force further. Mr. Marquez said that as downsizing has occurred, management has preserved LANL's future by not freezing or limiting the hiring of postdoctoral and other students. Recruitment of blue-chip scientists and engineers has continued. In addition, this was the second year that LANL has collaborated with the Lannan Foundation to give scholarships to students in this region. Twenty of those students came to work for LANL out of high school. In 10 to 15 years, this will make a significant difference in the diversity profile. He mentioned that LANL and Sandia National Laboratories (SNL) could do a much better job of recruiting and retaining local talent, and that the Science, Technology, Engineering and Mathematics (STEM) program has helped to increase the local talent pool. Mr. Marquez mentioned a management review board that looks at positions available at LANL and challenges hiring practices to ensure diversity. He concluded by saying that LANL draws a large percentage of its work force population from Los Alamos County, but also draws from Rio Arriba and Santa Fe counties. (For specifics on the LANL work force in terms of areas of focus, demographics, education level and size, please see the handout.)

Member questions and ensuing discussion included the following:

- in response to concern over local contractors being stepped over in favor of out-of-state contractors:
  - there are all kinds of procurements, and vendors ask LANL to direct dollars in a particular way;
  - in weapons/science campaigns, there are often fabrications/equipment not produced in this state; and
  - for environmental cleanup and construction work, LANL tries to use local suppliers for day-to-day operations, but the challenge is the economic situation — expenditures are questioned and local contractors have an unwillingness or inability to be competitive;
- LANL has institutional agreements with most regional universities, such as a community commitment program with Santa Fe Community College, and has had agreements with Northern New Mexico College in the past in the form of a strong machinist program, and it intends to continue collaborative efforts, especially math and science programs;
- in response to concerns about the lab targeting Hispanic employees from northern New Mexico:
  - LANL has mandatory drug and alcohol testing, and there would have to be positive test results for termination;
  - there could be performance issues caused by drug or alcohol use; and
  - employees can "self-identify" drug or alcohol use and salvage their careers;
- perhaps there are not so many science-technology folks in New Mexico, and that is the reason for fewer New Mexicans being recruited; there is a huge percentage of LANL employees who spend their entire career at the lab, and keeping institutional memory is important in the weapons industry;

- ****a request was made for a chart showing the ebb and flow of lab population over time, and LANL agreed to provide a chart that goes back to 1986;*
- LANL has local procurement preference options and flexibility to give local preferences; it might be worth looking at how Alamogordo structures its local preference option;
- technology training at branch colleges across the state and LANL's need to collaborate with more colleges and to assist in developing curriculum;
- in reference to what the state can do to foster technology transfer, it was made clear that LANL does not have a lot of assets besides its work force and quality education;
- gross receipts tax is paid by LANL as a for-profit organization as it no longer has nonprofit status as it did under the University of California; this brings in revenue to the state of approximately $40 million to $100 million, depending on budget revenue figures;
- the Northern New Mexico Consortium's work has concluded, but LANL intends to renew this collaboration;
- student internship programs draw from 2,200 students and depend on grade point average and other achievement metrics for selection; most high school students are from northern New Mexico, but college students come from across the state and postdoctoral students are more dispersed throughout the country; and
- a reminder that the STTC started as the Los Alamos National Laboratory Oversight Committee, which brought all the universities together to discuss possibilities for a curriculum that matched the skills needed by the lab and encouraged discussion and dialogue between the legislature and LANL.

Laboratory Science Overview

Mr. McBranch, chief technology officer at LANL, reviewed the breadth of LANL's national security missions, the evolution of its "culture of partnership" and details on LANL's Venture Acceleration Fund (VAF). He mentioned the diverse challenges the lab faces and the confidence that derives from focusing on its mission's impact through developing and applying science, technology and engineering solutions to national security missions. He expressed a desire for the lab to keep building its responsiveness. He added that material science has always been strong at LANL. He then emphasized the strength of the lab's advanced manufacturing, which is still in development and has a good collaborative environment, with new partnerships emerging. Advanced manufacturing has been identified as a national need that can assure that sophisticated manufacturing is linked to products and processes that arrive out of scientific discovery and technological innovation.

In reviewing the types of manufacturing at LANL at present, Mr. McBranch identified the primary mission areas as nuclear weapons, global security, renewable energy and nuclear energy.

He said the lab is also engaged in work in energy security, which is a national security imperative. Focus areas in energy security include the impacts of energy demand growth, sustainable nuclear energy and clean energy. Mr. McBranch also mentioned LANL's work in bringing the best science to the restoration of the forests in the Southwest U.S. in attempting to

find the best adaptation strategy.

Mr. McBranch said that the most impactful investments made by LANL are in research and development, with $140 million being directed toward long-term science and engineering. Other programs are very directed and milestone-based and include user facilities that track several thousand people per year, a strong institutes program that partners with universities and postdoctoral and other student programs, from which 80% of technology hires come.

In fostering what Mr. McBranch called a "culture of partnership", he spoke of LANL's work with industry as well as its international partnerships, such as a "SMART house" at LANL that was enabled by Japanese investments and leveraged with DOE investments. He emphasized the importance of developing renewable energy on a community scale, citing interactions with community colleges as a crucial element. He then described the New Mexico Consortium as a new business model that involves three research universities in the state as well as LANL, Los Alamos County and Richard Sayre and his research team. A new greenhouse facility and biological research laboratory recently opened that will focus work on energy security and global food security. Mr. McBranch noted the importance of drawing more New Mexico students into the highest levels of technology.

In reporting on the VAF, Mr. McBranch gave details of the fund's investment in New Mexico counties that has totaled $2.8 million since 2006. He cited the importance of fostering private sector economy and diversity because the national laboratories will not be a foundation of the New Mexico economy 10 years from now unless these shifts are made. In describing the VAF as a unique niche essential for local small companies, Mr. McBranch pointed out that three companies were acquired and that over half of the awards made from the fund were made to existing job creators to support their growth. He then passed around a sample of "tape-ease", a product produced by one of these companies, and stressed the importance of fostering companies that are capable of taking ideas from the lab and selling them to the world.

With $15 million in revenues, the VAF has created a healthy business environment. Statistically, 41 applications have been received, with nine selected for funding for a total of $339,500. Mr. McBranch described the VAF as a thriving program that looks to accelerate the success of its entrepreneurial partners.

Member questions and ensuing discussion included the following:

- because of the difficulty in attracting venture capitalists to New Mexico, the VAF is funded directly from Los Alamos National Security's (LANS's) limited liability company fee as part of its fee commitment to the community;
- continuing to find ways of venture acceleration rather than focusing on venture capital seems crucial, and some of the most impactful state investments have been in small businesses;
- flexibility is required to leverage state money through public-private partnerships and in the area of technology transfer;

- LANL's ability to innovate is tied to the private sector, and flexibility in working with industry benefits its mission but will never be its main mission;
- there is a lot of opportunity in space-based science, and New Mexico has to find more ways to take advantage of its sunshine and clear skies;
- special purpose or small nuclear reactors have been developed that generate electricity;
- engineering resilience is high, and a willingness to experiment low, after incidents at Three Mile Island and Fukushima, and the U.S. has an "appropriately conservative regulatory system", which challenges the building of small reactors in the U.S.;
- there is opportunity for growth in the area of collaboration among people at the lab, in the universities and at the legislature and to find areas of synergy among all; and
- LANL has already worked closely with universities in nanotechnology, with SNL and Kirtland Air Force Base in space exploration and with New Mexico Institute of Mining and Technology on homeland security issues.

The RHMC and the STTC each unanimously approved minutes from their June meetings.

LANL Program Overview

Mr. Steinhaus, director of the Community Programs Office at LANL, reported on procurement percentages for LANL and New Mexico businesses, with 59% of the lab's procurements going to New Mexico companies last year and 69% thus far this year. ****A committee member requested a detailed list of businesses for procurement along with dollar amounts.*

Pertaining to community commitment, LANL's vision includes education, quality of life and a thriving economy, and to that end, it invests $1 million in each area annually. Its community model is built upon a three-foundation approach that is mutually beneficial, regional and sustainable, with investments designed so that infrastructure is built in New Mexico. In the area of education, the strategy is to build a work force for the lab and regional companies by helping students become science-literate and by working to retain talent within the state. Relating to community giving, the strategy is to work with nonprofits mainly in New Mexico and to incentivize lab employees to be volunteers. Within the arena of economic development, the strategy is to take a proactive approach in generating revenue and starting new businesses, as well as helping existing businesses to grow by providing technical assistance and expertise-sharing. Such partnerships have garnered $37.6 million in leveraged grants for northern New Mexico colleges since 2006; investments have reached 531 nonprofits in 2012; and internet access has been improved in northern New Mexico with LANS's investment of $170,000 leading to grants totaling $76.2 million for broadband infrastructure.

Program results include the awarding of 855 scholarships through employee contributions, university partnerships yielding 695 graduates, providing matches to increase employee contributions and support given to companies and entrepreneurs that created 327 jobs. In working to develop the future work force through LANS-funded programs, there is an 86% job placement rate for graduates; $26.1 million was leveraged for math and science education;

and LANL's Math and Science Academy (MSA) helps to develop teachers and has expanded this year to include four new tribal schools. Teachers have reported that the science content learned in this program greatly helps their effectiveness in the classroom, and assessments given to MSA participants before and after the program testify to this improvement. Mr. Steinhaus also highlighted Native American student achievement in the Espanola public schools as rising to 56% in 2012-2013.

Mr. Steinhaus indicated that LANL is working hard to coordinate with the state on math and science initiatives through holding statewide STEM summits and that LANL will have recommendations in a couple of months. In addition, 73 student scholarships were given out this year. Also, LANL has been recognized for its volunteer programs, winning an award in 2011 that placed LANL ahead of Google, UnitedHealth Group and Morgan Stanley.

In conclusion, Mr. Steinhaus gave some results of the economic development program, which through its small business assistance program has served 349 small businesses, provided $4.5 million in technical assistance, affected both rural and urban businesses and created nearly 3,000 jobs in the 2000-2011 time frame. He gave an example of a Taos company assisted by the VAF that is an international company that provides software for math education. LANS invested $100,000 in this company, to which the Gates Foundation provided a $500,000 match, and the company just landed a $2.5 million grant from the federal government. As Mr. Steinhaus stated, the seed money helped to make this happen. Similar arrangements are occurring in tribal businesses, where the Indian Affairs Department has agreed to match LANS funding for worthwhile projects.

Member questions and ensuing discussion included the following:

- statistics on the MSA include: cost for the program is calculated per school and the investment is about $80,000 per year per school; 80% of students who begin the program stay with it; turnover for the teacher work force is high; and 57 teachers have completed a master's program in science and math;
- the largest nonprofit grant given was for $25,000 and was awarded based on meeting certain criteria and reporting back on metrics;
- both employees and retirees are part of the volunteer incentive programs; and
- the legislature partnered with the lab to start the MSA; making the program more robust could include replicating the model in other school districts in the state.

At this point in the meeting, Representative Garcia Richard took over as chair.

LANL Cleanup Status

Peter Maggiore, assistant manager for environmental programs (EP) for the DOE and NNSA Los Alamos Field Office, and Mr. Mousseau, associate director for EP at LANL, spoke to the committees on the EP related to the cleanup status and ground water protection. Mr. Maggiore cited that the mission of EP is to process and ship hazardous and radioactive waste to permanent disposal facilities and to clean up legacy sites and protect water resources in the state.

Also, the program has to adhere to the 2005 consent order, the stormwater individual permit with the federal Environmental Protection Agency and the framework agreement with the State of New Mexico, which is not an enforceable document, but a shared commitment with the DOE, he added.

Mr. Maggiore reviewed the fiscal year 2013 budget, noting that with sequestration, the final budget ($173 million) was significantly lower than what was requested ($239 million) and less than what the budget had been the previous fiscal year. EP did receive funding through the reprogramming of $40 million. Mr. Maggiore thanked the members for legislation that assisted in this funding being achieved.

Mr. Mousseau reiterated the importance of this funding to continue remediation work and to continue shipping low-level waste off The Hill in an effort to keep the "3706 Campaign" on track. He emphasized the importance of the work at Technical Area (TA) 54, which is to remove 3,706 cubic meters of waste. In fiscal year 2012, new people were trained, capability was developed, drums were processed and shipments were made of this waste. In fiscal year 2013, LANL began to bring up operating shifts, get crews in the fields and reprocess the waste. With all that is required in terms of repackaging, diagraming, assaying, sampling, remediating and characterizing this waste, the group, consisting of 450 people, operates 24 hours per day, seven days per week. He asserted that on or before June 30, 2014, the last shipment will occur.

Mr. Mousseau indicated that the 3706 Campaign is ahead of schedule. In its June report to the New Mexico Department of Environment (NMED), the campaign was 41 cubic meters ahead of schedule. During that quarter, 538 cubic meters of waste were shipped, which is more than most years combined. A total of 361 shipments have been sent to the Waste Isolation Pilot Plant (WIPP). As part of this cleanup, transuranic (TRU) waste is being shipped to WIPP, and mixed low-level waste is shipped out of state. About 200 more shipments will be made to WIPP to complete this cleanup. After the 3706 Campaign is completed, retrieval work for below-ground TRU waste will begin, he said. Also, the newly generated waste needs to be off the mesa by the end of December 2014.

In highlighting work done to protect ground and surface water, Mr. Mousseau said that automatic sampling and monitoring are both occurring on more than 140 ground water monitoring wells, and surface water has been sampled at more than 175 locations. In terms of the consent order, of the more than 2,100 contaminated sites, 933 are complete administratively, 125 have been delayed or deferred, 75 are pending administrative action and 1,006 are in progress. The Buckman Direct Diversion Project engages in extensive monitoring and an early notification system so that water can be turned off if needed.

Mr. Mousseau stressed that the ground water protection from chromium contamination is a high priority. The contamination came from boiler-cooling tower operations that the lab engaged in between 1956 and 1972. EP is cleaning up the toxic chromium from affected areas, especially an area adjacent to Pueblo of San Ildefonso lands where there is contamination in the ground water. He described methods of dealing with the contamination, including development

of a wetlands area and a grade control structure to turn Chromium 6 into Chromium 3 and to keep from ruining the wetlands. Another measure includes pumping from two wells that are in the midst of the worst area, which is a way to recover the chromium, treat the water, discharge it and put it back onto the surface of the land.

In discussing a path forward, Mr. Maggiore gave a scope of work for fiscal year 2014 that includes completing the 3706 Campaign, disposing of other TRU waste, continuing measures to deal with ground water chromium contamination and ground water and surface water monitoring and investigating and cleaning up other high-risk areas. He remarked that there has been much progress in addressing the highest environmental risks at LANL, that the work has been performed safely and that the NMED provides oversight.

Ryan Flynn, secretary-designate of environment, commended LANL for its TRU waste campaign and the rigorous schedule of waste removal. He pointed out that the TRU campaign has been a bipartisan effort and that having the legislature work with the executive has been crucial.

DeAnza Sapien, executive director of the Regional Coalition of LANL Communities, a board of eight local elected officials who represent communities surrounding LANL, said that local economic development and environmental remediation of Area G is a priority. The group worked closely with the DOE and LANL and organized at the local and regional levels to create one voice in the region to deal with environmental cleanup. He remarked that the coalition works closely with chambers of commerce and labor groups involved in cleanup and that it wants a strong partnership with the legislature, too.

Member questions and ensuing discussion included the following:

- a five-step decontamination process has been used that involves spraying waste, then using a spray/peel process and putting on a chemical that frees up radioactivity on the surface; this process will be used with newly generated waste, which could then possibly be directed to the Waste Control Specialists facility in Texas;
- processing and transportation of mixed low-level waste is cheaper than TRU waste, which adds in transportation costs to WIPP;
- the need to look at real-time monitoring and learn new technologies for the removal of waste from different water sources across the state;
- the biggest challenge in the cleanup of historic landfills is not knowing how deep the waste goes until cleanup begins;
- there are seven separate streams of below-grade waste amounting to a little over 2,000 cubic meters; in coordination with the NMED, there is a framework agreement that gives a schedule and quantities by year; thus far, six of these are scheduled;
- the NMED wants the chromium plume properly defined, but there is not an imminent threat to Los Alamos County and no connection to water that ends up as surface water at Buckman;
- policymakers need a better sense of the hydrogeology of the state's aquifers; EP will

prepare a summary to that end;

- the DOE has a classification of waste that specifies the different types as either high-level, TRU, low-level or mixed; each has special requirements for handling and processing;
- most waste is contaminated with hazardous materials, so it becomes "mixed";
- there are permitting requirements for waste, acceptance criteria for where the waste ends up and inspections of the waste treatment processes;
- concern over the Aamodt water settlement and the effect of chromium contamination; water patterns and contamination need to be looked at in this area;
- the WIPP route and the possibility of work on the intersection of NM 599 and I-25; and
- WIPP controls the schedule of shipments.

Regional Economic Development Initiative (REDI Net)

Laura Gonzales, chief information officer for REDI Net, noted the importance of fiber communications, citing that global data traffic has grown 800% over the past five years, and the internet, including television and video, has also grown hugely. She remarked that there are actually more technological devices than people in the U.S. Having fiber networks also enhances economic growth in communities, she said, referring to findings of the Fiber to the Home Council's 2012 annual conference that showed an increase in new businesses after fiber installations in those communities. Some of the benefits in communities with high-speed broadband include distance education, telemedicine, emergency response, cybersecurity, smart metering and a variety of economic development possibilities such as home-based businesses, tech startups and assisting local growers with technology.

REDI Net is a middle-mile-to-last-mile regional fiber initiative that puts in backbone fiber for local service providers to homes. REDI Net was developed in response to regional need, which was determined by a cooperative made up of the North Central New Mexico Economic Development District, pueblos, counties and electric cooperatives. The group then decided to apply for funding together, with the economic development district as the primary applicant. Ms. Gonzales said that REDI Net was successful in receiving funding to build infrastructure for high-speed broadband service and that it is now over 96% complete for initial buildout of the project. This network serves hospitals, medical clinics, schools, public safety entities, libraries, tribal buildings and county buildings and begins in Santa Fe and ends in Hernandez and branches off to all of these different locations. (See page 12 of the handout for a map of the project's reach.)

Ms. Gonzales noted that REDI Net is moving forward with partnerships among the state, local and tribal governments, electric cooperatives and telecommunications providers, as well as working with the federal government to expedite the construction of fiber pathways. She mentioned that there have been several delays due to all of the governmental red tape to get projects built out. She detailed the general approaches needed to move forward, which include developing standard practices; leveraging programs, funds and infrastructure that are already available; and mitigating and assessing risks. Ms. Gonzales also advocated for New Mexico

becoming a fiber-friendly state and finding creative ways to get fiber into communities without spending a lot of money.

Member questions and ensuing discussion included the following:

- Colorado set aside certain funds to dedicate to fiber networks, and there has been discussion about New Mexico setting aside some of its education funding to build fiber out to schools;
- REDI Net partners with last-mile service providers to bring service to schools, hospitals and the state; the state did not want to participate, but it still could;
- **** A committee member made the request to have a letter written to Jemez Electric Cooperative to inquire about the progress of the fiber network in La Mesilla; the letter would stress the importance of adhering to the schedule so as not to miss out on funding;*
- REDI Net has five entities that have applied to service the last mile, and, with growth, more entities will come on board;
- there are opportunities for New Mexico to apply for federal funding for broadband support, interconnection and sharing of resources;
- REDI Net has a consortium of educational institutions participating in a three-component analysis and assessment and will be able to present its findings to the legislature;
- fiber networking does not require as much maintenance as the equipment that accompanies it, which often has a five- to seven-year obsolescence that needs to be planned for, and REDI Net is putting money into reserves to deal with replacements and maintenance;
- in the southern part of the state, construction began in 2010 on fiber networks, which is now 96% complete;
- there are local companies that train and certify people in fiber optics, and the more the network grows, the more these services will be needed;
- in terms of ownership of the fiber and equipment, the physical infrastructure of fiber and conduits is owned by the city, county or entity, and the equipment is owned and maintained by REDI Net until the grant period is over, when ownership is then transferred to the entities;
- REDI Net oversees contracts to maintain and repair fiber and often does this with in-kind agreements with communities;
- no state funds have been used to date to support any of these projects;
- REDI Net needs to start discussions with the Public Education Department on expanding this technology to schools; and
- it is important to have middle-mile fiber routes established to increase available bandwidth.

Adjournment

There being no further business, the meeting adjourned at 4:50 p.m.

Thursday, July 18

Tour of LANL

LANL provided an invitation-only tour to members of the RHMC and STTC and staff, which focused on the TA 54, Area G cleanup site as well as the site of the new TRU waste facility, viewing Transuranic Waste Transportation Containers and viewing the Buckman gauge station for water monitoring.

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

September 5-6, 2013
Rotunda Room, UNM Science and Technology Park
801 University Boulevard
Albuquerque

The third meeting of the Science, Technology and Telecommunications Committee (STTC) was called to order by Representative Carl Trujillo, chair, on September 5, 2013 at 10:12 a.m. in the Rotunda Room at the UNM Science and Technology Park.

Present
Rep. Carl Trujillo, Chair
Sen. Michael Padilla, Vice Chair
Rep. Kelly K. Fajardo
Rep. Roberto "Bobby" J. Gonzales
Rep. Jason C. Harper
Sen. Bill B. O'Neill (9/5)
Rep. Debbie A. Rodella
Sen. John C. Ryan (9/5)
Rep. Luciano "Lucky" Varela
Rep. Monica Youngblood (9/5)

Absent
Sen. William F. Burt
Sen. Linda M. Lopez
Rep. James E. Smith

Advisory Members
Sen. Carlos R. Cisneros
Rep. Stephanie Garcia Richard (9/5)
Sen. Ron Griggs
Sen. Richard C. Martinez
Rep. Bill McCamley
Sen. William H. Payne (9/5)
Rep. Jane E. Powdrell-Culbert
Rep. Nick L. Salazar
Rep. Don L. Tripp
Sen. Timothy M. Keller
Sen. Steven P. Neville
Sen. Peter Wirth

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

Staff
Gordon Meeks, Legislative Council Service (LCS)
Ralph Vincent, LCS
Renée Gregorio, LCS
Cassandra Jones, LCS

Guests

The guest list is in the meeting file.

Handouts

Handouts and other written testimony are in the meeting file.

Thursday, September 5

Call to Order and Introductions

Members of the committee introduced themselves. Representative Trujillo invited Chaouki Abdallah, provost, University of New Mexico (UNM), to speak. Dr. Abdallah told the committee that the University of Tennessee had created an incredibly successful endowed chairs program and suggested that New Mexico could consider following a similar model in order to strengthen its universities and its national laboratories. Dr. Abdallah discussed endowed chairs that UNM currently has in place and the procedures that UNM has used in making its selections. He told the committee that UNM is currently collaborating with Sandia National Laboratories to hire a joint employee to work part time at both institutions. He noted that, in the past, UNM and Sandia National Laboratories have shared employees, but this is the first time they have collaborated during the hiring process. Dr. Abdallah also discussed the importance of centers of excellence in New Mexico.

Members of the committee asked questions about and discussed:

- the University of Tennessee endowed chair model;
- the relationship between UNM and Sandia National Laboratories;
- the costs of setting up endowed chairs for the various stakeholders;
- academic and scientific areas in which New Mexico could specialize;
- models and best practices for endowment; and
- issues regarding intellectual property.

Welcome to UNM

Catalin Roman, dean, School of Engineering, UNM, told the committee that economic development is one of UNM's top priorities. He told the committee that UNM has four engineering centers that receive funding from the National Science Foundation. He discussed various degree programs in engineering offered by UNM. Dr. Roman told the committee that, often, incoming students require very large up-front investments due to their lack of preparation for some of the science and math classes required in engineering programs.

Members of the committee asked questions about and discussed:

- engineering programs at UNM and New Mexico State University (NMSU);
- what college preparation students should receive while in high school;
- decreases in federal funding;
- research infrastructure;
- technology transfer issues;
- cybersecurity in New Mexico; and

- the leveraging of state funding in order to receive federal funding.

Technology Transfer Issues

Elizabeth (Lisa) J. Kuuttila, chief executive officer and chief economic development officer, STC.UNM, told the committee that STC.UNM was formed in 1995 and serves and supports all of UNM's academic programs. The mission of STC.UNM is to nurture innovation and economic development for the UNM community. Ms. Kuuttila told the committee that STC.UNM does this by protecting technologies developed at UNM and transferring those technologies to the marketplace; connecting the business community to UNM; and facilitating UNM's role as a contributor to New Mexico's economic development. Ms. Kuuttila provided the committee with a list of the STC.UNM board of directors and the STC.UNM organizational chart.

Ms. Kuuttila provided the committee with a list of STC.UNM's commercialization activities, including:

- events such as educational seminars and creative awards;
- the Joseph L. Cecchi VentureLab, which includes physical and virtual offices, business services, student intern support and an advisory group;
- licensing;
- marketing, such as social networking and technology marketing;
- intellectual property protection, including an external patent counsel and knowledge regarding academic environment considerations; and
- technologies, including STC.UNM's technology portfolio and technology scout alerts.

Ms. Kuuttila told the committee that economic development activities are aided by the UNM president, the Economic Development Advisory Group and the Economic Development Council. Ms. Kuuttila provided the committee with data regarding invention disclosures, patents and license agreements, all of which have steadily risen since 1996. Ms. Kuuttila also provided information about the number of start-up companies with which STC.UNM has been involved since 1996, with nine of those start-ups companies beginning operation in 2013.

Ms. Kuuttila discussed several of the STC.UNM start-up companies with the committee.

- Pajarito Powder is an Albuquerque-based start-up company that focuses on non-platinum fuel cell catalysts.
- Skinfrared is a company promoting technology that allows for a noninvasive diagnostic technique for skin cancer, based on infrared imaging.
- AgilVax, Inc., is a company that develops superior vaccines and integrated platforms for rapid vaccine discovery and delivery.
- Avisa Pharma, Inc., is developing a proprietary, point-of-care biomarker breath test for the rapid and accurate detection and monitoring of urease producing multi-drug-resistant pathogens.
- NaonMR has developed the first system for rapid isolation of rare cells from complex matrices at levels of one cell/ml. or lower.
- Intellicyt develops and markets innovative high-throughput cell and bead-based

screening solutions for use throughout the life sciences.

Ms. Kuutilla told the committee that the idea of "creating a rainforest in the desert", based on a book entitled, *The Rainforest: The Secret to Building the Next Silicon Valley*, involves building innovation ecosystems by using: ideas and inventions; government and trade and industry organizations; education and work force development; real estate and business infrastructure; culture, societal values, models and rules of law; money; talent; coaches and mentors; academia and research; business support services; access to global markets and supply chains; and news and media outlets. Ms. Kuuttilla identified areas of strengths and weaknesses for New Mexico.

Ms. Kuuttilla classified New Mexico's ideas, culture and academics as strong; New Mexico's government, trade, education, talent, coaches, business support services, access to global markets and news and media outlets as moderate; and New Mexico's money and real estate as being in need of more support. Ms. Kuuttilla told the committee that weaknesses regarding money could be addressed by increasing investments in New Mexico venture funds and providing gap funding to research organizations. She also told the committee that New Mexico needs to identify and create a research district. Research districts create a mutually supportive relationship between a scientific institution and a concentration of technology businesses. The most successful research districts are centers of innovative science. Ms. Kuuttila discussed and identified potential locations for research districts in Albuquerque.

Fred Mondragon, economic development consultant, told the committee that entrepreneurship is taught at UNM. He discussed centers of excellence that have been created in New Mexico, including three centers that were funded approximately 30 years ago and that have been very successful.

Members of the committee asked questions about and discussed:

- site selection criteria for research districts;
- venture capital investments in New Mexico;
- centers of excellence;
- cybersecurity; and
- business incubators.

Telehealth

Dale Alverson, medical director, Center for Telehealth and Cybermedicine Research, UNM, told the committee that insurance coverage legislation for telemedicine services was passed and signed into law in 2013. The New Mexico Telehealth Act was passed by the legislature and signed into law in 2004. Dr. Alverson told the committee that telemedicine creates a virtual consultation and provision of service between providers and patients, which increases patient access to care. The Health Information Exchange (HIE) creates a virtual medical record about a patient from a variety of electronic health records, which increases ease of access for authorized entities to access a patient's health information. Dr. Alverson told the committee that allowing multiple health care providers access to the same record of clinical

information will make health care delivery more robust and efficient; improve continuity and outcomes; and reduce costs. He told the committee that the HIE portal might be accessed when a doctor is seeing a patient for the first time; the patient is seen infrequently; the patient is known to have received care elsewhere; the medical case is complex; the patient has had emergency room visits; and a disaster is occurring.

Dr. Alverson told the committee that the benefits of the HIE include: access, with patient consent, to each patient's health information; improved situational awareness; better evaluation capability; decreasing the unnecessary duplication of tests; avoidance of readmission; and better and more complete data analytics. The New Mexico Health Information Collaborative (NMHIC), which oversees the HIE, includes the Public Health Division of the Department of Health, patients, clinicians, hospitals, clinician offices, laboratories and emergency rooms. The HIE is cloud-based.

Dr. Alverson discussed the ways in which telemedicine might be used and accessed. He told committee members that telemedicine can be used for direct patient care; "store and forward" uses, which allow images to be stored and forwarded for review by medical specialists; and trauma triage. Dr. Alverson informed committee members that the New Mexico Telehealth Alliance includes providers, consumers, telehealth experts, communication networks and social networks. The alliance reflects the diversity of health care in New Mexico. Dr. Alverson told the committee that tools used for telehealth include videophones, Skype, IP-based software and hand-held devices. Other devices that could be used in telemedicine include remote monitoring devices and Google Glass. Dr. Alverson told the committee that when telemedicine and the HIE are used together, they create a powerful set of complementary tools in providing virtual care. They also create an improved ability to diagnose, treat and manage patients directly or through consultation with other providers. Together, telemedicine and the HIE create an interaction similar to a face-to-face interaction between a provider and a patient.

Dr. Alverson requested that the legislature:

- officially recognize the NMHIC as the statewide HIE and require health care providers to participate;
- officially recognize the New Mexico Telehealth Alliance as the statewide resource center for telehealth as a replacement for the Telehealth/HIT Commission;
- develop a statewide telehealth fund or grant program; and
- develop a matching funds pool for eligible participants.

Members of the committee asked questions about and discussed:

- telehealth and the HIE;
- access to care, particularly in rural areas;
- New Mexico health concerns; and
- legislative proposals.

Centers of Research Excellence

Representative Trujillo informed the committee that a presentation regarding centers of

research excellence would be moved to Friday, September 6, 2013, due to time constraints.

Telecommunication Regulation

Jeff Lindsey, regional vice president of public policy for CenturyLink, told the committee that CenturyLink is concerned about the regulatory structure of telecommunications in New Mexico. Mr. Lindsey told the committee that the Public Regulation Commission (PRC) recently had a finding of effective competition for bundles but not for basic service. Mr. Lindsey told the committee that he does not believe that regulations in the state are keeping up with the market and asked that the legislature consider looking at changes regarding the issue. Mr. Lindsey told the committee that rural regulations have worked for many years and requested that the legislature enact rural regulations for all local exchange carriers in order to even the playing field.

Members of the committee requested that CenturyLink be placed on the October agenda of the STTC in order to examine this issue more fully.

Members of the committee asked questions about and discussed:

- CenturyLink employment;
- quality of service regulations;
- effective competition determinations by the PRC;
- regulations for different classifications of carriers;
- CenturyLink customers; and
- potential legislation.

The committee recessed at 2:40 p.m.

Friday, September 6

A motion was made and seconded and the minutes from the July meeting were unanimously approved. Representative Trujillo then indicated that the PRC and carriers will be invited to the Las Cruces committee meeting to make a presentation on current telecommunications regulations so that a well-rounded view is heard.

Centers of Research Excellence

Carlos Romero, associate vice president for research administration, and John McGraw, professor of physics and astronomy, UNM, discussed the challenges and strengths associated with making New Mexico a solid technological research community. Mr. Romero spoke of the challenge of aligning public and higher education and the research institutions so that the state can leverage its strengths. Mr. Romero posed the questions of how to bring water resources and energy together in a desert; how to leverage the oil and gas industry for power; how to take brackish water and produce electricity; and how to use existing technologies but also scale up that use and bring what is available into the marketplace through the use of public-private partnerships and partnering with the state's institutions of higher education. He then mentioned the framework for collaboration allowed for in House Bill 562 (2013), which created a technology research collaborative (TRC). The bill also created a TRC board. (See the handout

for member composition.) Mr. Romero indicated that, although this was a good start, a bit more is needed to make collaboration viable.

Mr. Romero stated that New Mexico needs to focus on bringing more New Mexico students into education, graduation and attainment of degrees in science, technology, engineering and math (STEM), as well as creating an economy that keeps these graduates in the state. He added that it would be advantageous for the state to create strategic investments and for the laboratories and universities to jointly hire personnel to address issues related to water, energy and securing cyberspace. Among New Mexico's strengths are its three nationally recognized research universities, four federally funded research laboratories, its geographic location and its history of strong support for higher education. Mr. Romero stressed that while people in all of these arenas are doing great work, there seems to be a disincentive for collaboration. He encouraged collaboration among the research universities and the national laboratories so that idle time in the laboratories could be filled and New Mexico students could experience the laboratories firsthand.

Mr. Romero posed the question of how to use state support to create centers for research excellence and stated that New Mexico needs legislative support for collaboration to be possible. He posited that to "bring it all together" will require a strong K-12 system to produce good students. He said that UNM has four STEM grants from the federal Department of Education to assist in strengthening educational programs, to aid in matriculation and outreach and to create opportunities for teachers in public schools. There is a real need to assist teachers with their comfort level in math and science. He stated that having centers of research excellence helps. He named several research institutes associated with UNM and areas of human and research development at the university that have an impact on the state's economy. Lastly, Mr. Romero cited the UNM Science and Technology Park as a prime example of the kind of partnership that can further help New Mexico's economy because of its mixed use of space for research and development, laboratories and offices for technology-based companies and university research.

In addressing what is vital to New Mexico, Dr. McGraw stressed the importance of recognizing that energy and water are inextricably linked in New Mexico. He said that in talking with colleagues at the national laboratories, he found that they all agreed that locally generated research can be done to good effect in relationship to energy and water. As an example, Dr. McGraw stated that New Mexico is a major oil, gas and coal producer with a stable base of energy generation, and research could be applied to make these processes more effective, safer and consistent. He spoke of the importance of the state taking a leadership role in exploring alternative energy possibilities, such as biofuels in the Rio Grande corridor and the eastern part of the state, nuclear energy in the western part of the state, wind energy, geothermal energy and nuclear fusion. Dr. McGraw emphasized that, with one of the greatest number of days of sunshine anywhere in the world, New Mexico is the premier place to research solar energy. He added that the state has done research in passive thermal and heat generation for solar as well as smart grid research. At present, UNM is partnering with Mesa del Sol to see how smart technology can be used to power homes. Dr. McGraw emphasized that New Mexico needs an infrastructure that ensures that grant funding arises from collaboration and that all participants

need to speak with one voice, which would put the state in a direct position to compete for existing funds. He concluded by saying that the state must realize — mentally, physically and fiscally — the advantage that it has through this core collaboration model.

Committee members' questions followed, and the following points were raised:

- the entire framework for collaboration would include getting scientists and engineers to work with each other as well as with teachers, who could then bring the research to their students and monitor experiments with their students;
- the need to be innovative in terms of collaboration and to create a stronger cyber-grid in New Mexico that will reach all community colleges;
- a question for UNM to investigate related to how many degrees need to be given each year to directly affect improvement in the state's economy;
- UNM is actively researching the issue of math anxiety among teachers and how this affects students, particularly girls who might internalize a female math teacher's anxiety; UNM is looking at correlations related to students that persist in STEM fields and how to adjust curriculum and train teachers so that more students can be successful;
- there is no funding for the TRC board, and the governor has not yet made any appointments to the board, but a funding request is being identified for presentation to the Legislative Finance Committee (LFC) for both recurring and nonrecurring funding; and
- as was done with prior legislation for a TRC, a fund needs to be established for this purpose.

Venture Space Small Business Incubator

Chris Hall, chair and professor at the School of Engineering, Mechanical Engineering Department, UNM, gave a brief recent history of the state of space technology and exploration. Although the National Aeronautics and Space Administration (NASA) no longer has a space shuttle program, space exploration is key, with a major transition in place that involves more cost-effective commercial enterprises. Dr. Hall spoke of the paradigm shift occurring in space technology, which replaces large spacecraft with small ones, known as "CubeSats". The interest in the space technology field is for cube-sized spacecraft to communicate with one another. A network of smaller cubes could eventually replace larger spacecraft, he added. Dr. Hall stated that he only sees space technology and exploration as increasing in the next several years, and he sees New Mexico as a potential center for small satellite development.

Dr. Hall talked about the Venture Space Small Business Incubator (Venture Space) as a way to attract funding by connecting New Mexico's three space-related constituencies: the engineering and science research community at UNM, the small business community and government laboratories and other organizations engaged in space research. He said that each year about one billion dollars comes to the laboratories for research and development, but more than 60% of it goes out of state. The Venture Space partnership would use state seed funding as leverage to pursue some of this funding from existing federal programs. Dr. Hall also mentioned that there is so much good work happening in New Mexico at places such as Spaceport America,

White Sands Missile Range, all the universities and government laboratories, as well as the aerospace engineering program at NMSU, which has a good reputation. He also added that Venture Space is actively engaged in collaborating with the University of Texas, New Mexico Institute of Mining and Technology (NMIMT) and UNM and has identified more than 60 potential partner organizations.

Dr. Hall highlighted several of Venture Space's activities, which include evaluating the commercial relevance of new technologies, assisting entrepreneurial space companies through using Venture Space resources, funding and mentoring UNM engineering graduate students and undergraduate project teams and teaming with NMSU and NMIMT to establish regional collaborative opportunities in the space business. He cited specific examples of student projects, which include a project at UNM's Configurable Space Microsystems Innovations and Applications Center devising a CubeSat mission design and deployable antenna for smaller spacecraft. Students from UNM, NMSU and NMIMT are all involved. Dr. Hall has encouraged the students to continue this project and to submit a proposal to NASA's Reduced-Gravity Student Flight Opportunities Program. He concluded by presenting a request for legislative funding for $250,000, which would help to fund faculty and students providing technical support to small companies that are pursuing space ventures through Venture Space.

Discussion and questions ensued, and the following points were made:

- there is active research funded by NASA in UNM's engineering departments and at NMSU on autonomous vehicles related to the drone program, which could be a good avenue for the state to obtain federal funding;
- related to job creation, the North American Industry Classification System has categorized specific skills across the entire work force for matching to specific jobs in spacecraft technology; and
- the importance of the legislature in finding ways to fund these collaborative projects in space technology and exploration.

STEM Education

Vanessa Svihla, co-director, Interaction and Interdisciplinary in Educational Activity, and Richard Bryant, College of Education, UNM, outlined issues related to STEM education. Dr. Bryant spoke of his great passion for science education alongside his experience as a high school science teacher for 12 years. For the past 25 years, he has worked in higher education in the area of teacher preparation. He said that he would speak about the latter, while Dr. Svihla would cover the educational nature of science classrooms.

Dr. Bryant spoke of the current crisis in education as not simply related to a shortage of teachers, but to the nature of science and math, which includes national math standards in both content and process methodology. He delineated elementary and secondary teacher requirements, both at the basic level and for those wanting endorsement in these subject areas. He added that UNM's students complete teacher training and are well-prepared for the classroom and that approximately 20% of UNM's majors are in math and science.

Dr. Svihla spoke of her work in supporting teachers and in researching the STEM education field. She said that New Mexico has strong standards, but, in many ways, the educational system is not set up for success. She cited a tendency to let textbooks drive instruction and to offer "cookbook" laboratory sessions that do not encourage intellectual curiosity. She added that, with these methods, the system is not giving students needed opportunities to learn and is not preparing them to address the larger issues that society needs to address, such as climate change and biodiversity.

In outlining typical issues that students struggle with, Dr. Svihla spoke of a range of attitudes in students: some simply are not interested in STEM education; some are well-prepared and well-advised; and others are not adequately prepared or do not understand the field enough to persevere. She emphasized that a focus on content and practice is the needed leverage point, and that includes developing an understanding of core ideas and cross-cutting themes as well as the practices of asking questions and investigating. She added that what is needed among STEM students is intellectual curiosity and critical engagement, and the educational system needs to foster these qualities.

In turning to what works in STEM education, Dr. Svihla spoke of the need for a broader model of evaluation than that of controlled scientific trials. Scientists engage in many other methods, she added, and New Mexico is quite different from other states with its rural population. In looking at curricula in the Great Explorations in Math and Science program as it relates to Illuminating Engineering Society criteria, she cited the space science sequence, which is shown to have a positive effect on achievement, as it includes professional development. She added that guided inquiry is better than direct instruction and that connecting to everyday understanding is critical. She spoke of the need to look at how students are learning; to support students in learning new practices; and to recognize that effort and perseverance are actually more important than IQ.

In seeking ways to accomplish these learning goals, Dr. Svihla indicated that research is a vital component of effective teaching, as well as matching instruction to what the task at hand requires. She highlighted a grant from the United States Department of Agriculture that allows the nutrition program at UNM to develop interactive learning assessments that allow students to provide counsel to clients virtually as a means for students to learn content. This system can later be applied to STEM subjects, linking learning new practices and being assessed in real time. She also spoke of a collaborative project with Dr. Jeff Wilson, the Dumpster Project, which asks the question, "How would you design a home for a world with 10 billion people?" and asks students to come up with a sustainable solution by turning the dumpster into such a home.

Dr. Svihla concluded by suggesting that in order to make STEM education better in the K-12 education system, what is needed is project- and problem-based instruction that is engaging for students, performance assessments that support student learning and sustained professional development for teachers.

Committee members then engaged in questioning, and the following points were made:

- New Mexico does not have subject-specific certification at the secondary level for science teachers, and unprepared teachers exist;
- what could assist in teacher preparation is to offer multiple certifications that would include not only a general science certification but also subject-specific certifications in the fields of science as well as assessments of the teaching being done;
- teachers tend to leave schools that do not operate well institutionally, in terms of leadership, autonomy, good organization, student discipline and working conditions;
- professional development opportunities rejuvenate teachers, school administrators and school boards; it could also be advantageous to institute a Teach for America program at the state level and an induction program for new teachers; and
- there is a need to have teachers recognized as professionals, to embrace more performance-based assessments and to begin looking at the mission of school districts from the community perspective.

Public Comment

Ed Angel, professor emeritus in electrical engineering at UNM, gave testimony on the "Supercomputer Challenge" program, which teaches middle and high school students how to use supercomputers to analyze, model and solve real-world problems. He said that the program has been ongoing since 1990 and that it has been accomplished with 2.5 staff members and $150,000. He added that the program cannot accommodate all of the students that want to come through it, and he would like to double the size of the program over the next few years. He stated that $60,000 would fund the needed staff and help support teacher training.

Ensuing discussion among committee members focused on the following points:

- the need to ensure that the state focus on technology improvements alongside government accountability that would include strong oversight of technology decisions and a look at the efficacy of the Information Technology Commission (ITC);
- a motion was made, seconded and approved to have an added special joint meeting with the LFC to discuss technology issues; and
- a request for the Department of Information Technology to give an overview of the legislation that created the ITC.

Tour of the Center for High Technology Materials

The STTC members proceeded to a tour of the Center for High Technology Materials (CHTM) led by Dr. Sanjay Krishna, director, CHTM, and Steven R.J. Brueck, former CHTM director.

Dr. Krishna provided an overview and history of the CHTM research laboratory. The CHTM's research facilities began in 1992 with a bond issue approved by the state and dedicated in 1997. The CHTM was constructed on the south campus in the UNM Research Park. The CHTM laboratories are devoted to the research of nanotechnology and advanced optics. The CHTM includes modern cleanroom facilities that allow for the fabrication of advanced

semiconductor devices from epitaxial structures grown at the CHTM. Also within the main building are nearly two dozen laboratories that house high-power lasers, scanning electron microscopes, devices for molecular beam epitaxy and advanced work stations for numerical simulations of atomic structures and beam propogation within laser cavities.

The objectives of UNM's CHTM are to:

- foster research and education in the fields of optoelectronics, microelectronics and nanotechnology;
- enhance collaboration among UNM, federal laboratories and industry; and
- promote economic development in New Mexico.

The CHTM is a nationally recognized center for photonics and microelectronics research, and over 80% of the annual research budget of approximately $7 million is funded by external research contracts. Capabilities include:

- high-quality and advanced research capabilities, where, for example, a novel semiconductor device can be designed, fabricated and evaluated completely in-house;
- a research environment that provides educational opportunities for graduate students, allowing them to gain an in-depth experience of their research topic and acquire a competitive edge as they enter the job market;
- that the CHTM's active research and education role also promotes economic development in New Mexico through spin-off businesses that have grown from research projects at the CHTM; and
- that the CHTM can utilize vertical integration with faculty experienced in photonics and microelectronics devices with access to powerful computing. The CHTM boasts two metal organic chemical vapor deposition reactors and five molecular beam epitaxial growth systems for the materials growth of advanced epitaxial semiconductor structures. The CHTM's cleanroom offers a full range of process equipment for the fabrication of advanced semiconductor devices. CHTM laboratories are extremely well-equipped, with electrical and optical test equipment for the evaluation of materials, devices and systems.

Adjournment

There being no further business before the committee, the meeting was adjourned at 2:30 p.m.

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

October 17-18, 2013
Wooton Hall
2995 Knox Street
New Mexico State University
Las Cruces

The fourth meeting of the Science, Technology and Telecommunications Committee (STTC) for the 2013 interim was called to order by Representative Carl Trujillo, chair, on October 17 at 10:20 a.m. in Wooton Hall at New Mexico State University (NMSU).

Present
Rep. Carl Trujillo, Chair
Sen. Michael Padilla, Vice Chair
Rep. Kelly K. Fajardo
Rep. Jason C. Harper
Sen. Bill B. O'Neill
Rep. Debbie A. Rodella
Rep. Monica Youngblood

Absent
Sen. William F. Burt
Rep. Roberto "Bobby" J. Gonzales
Sen. Linda M. Lopez
Sen. John C. Ryan
Rep. James E. Smith
Rep. Luciano "Lucky" Varela

Advisory Members
Sen. Carlos R. Cisneros
Sen. Ron Griggs (10/17)
Sen. Richard C. Martinez
Rep. Bill McCamley
Rep. Jane E. Powdrell-Culbert
Rep. Stephanie Garcia Richard
Sen. Timothy M. Keller
Sen. Steven P. Neville
Sen. William H. Payne
Rep. Nick L. Salazar
Rep. Don L. Tripp
Sen. Peter Wirth

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

Staff
Gordon Meeks, Legislative Council Service (LCS)
Ralph Vincent, LCS
Jennifer Dana, LCS

Guests
The guest list is in the meeting file.

Handouts

Handouts and other written testimony are in the meeting file.

Thursday, October 17

Call to Order and Introductions

Representative Trujillo called the meeting to order and welcomed the committee members, staff, presenters and audience members to the meeting. At his request, committee members introduced themselves.

Welcome and Update on Issues of Interest to NMSU

Garrey Carruthers, Ph.D., president of NMSU, welcomed the committee to the NMSU campus and apprised the committee of NMSU's efforts at accelerating economic development locally and statewide. His presentation focused on the Arrowhead Center, Arrowhead Innovation Network (AIN) and NMSU's approach to meeting commercialization challenges.

Dr. Carruthers told the committee that it is the mission of the Arrowhead Center to help create economic opportunities for New Mexico residents, while assisting in serving the needs of New Mexico's diverse population. The mission is carried out through a variety of comprehensive programs, including education, research, extension education and public service. Arrowhead Center activities include:

- commercialization through innovation, including the creation of the Launch Proof of Concept Center;
- forming partnerships between university researchers, entrepreneurs, students, employees, facilities and key markets;
- engaging in projects in the realms of aerospace, agriculture, biotechnology, clean energy, information technology, water conservation and engineering; and
- leveraging partnerships to move innovative technologies from NMSU laboratories and development settings to market.

Dr. Carruthers explained that the AIN is a collaborative of regional players supporting the Launch Proof of Concept Center and is designed to: create and retain talent; invest in innovation and entrepreneurship; and strengthen the relationship between research and commercialization. The AIN works to fill in the gaps of the Launch Proof of Concept Center by creating a network to support it. The network is composed of individuals, organizations and corporations with business, technical and industry expertise and supports early stage investments; the AIN network is present in California, New Mexico and Texas.

Dr. Carruthers expressed that NMSU is rising to meet the challenges of commercialization in a number of ways by:

- targeting private sector business needs;
- encouraging and incentivizing faculty and student participation in innovation and entrepreneurship;
- funding invention and innovation through seed grants, connections to angel investment groups and venture capitalists and attracting institutional and private

investors to the NMSU Innovation Investment Fund; and
- fostering partnerships between innovators and experts with business, technical, investment and industry expertise.

Members of the committee asked questions about and discussed:
- proof of concept funding;
- expansion of the angel investment credit;
- continuing to develop and expand the number of early college high schools in New Mexico;
- universities' infrastructure capital improvement plans for capital appropriations;
- interest in commercialization of intellectual property;
- current funding levels for the Higher Education Department; and
- partnerships between New Mexico universities and Los Alamos National Laboratory (LANL) and Sandia National Laboratories.

The committee discussed supporting legislation regarding State Investment Council investments.

Approval of Minutes of September 5-6, 2013 Meeting

A motion was made and adopted approving the minutes of the September 5-6, 2013 meeting.

Reduced Gravity Biometrics Laboratory

Ou Ma, professor in the College of Engineering in the Mechanical and Aerospace Engineering Department, NMSU, and Robert Wood, professor and academic head of the Department of Human Performance, Dance and Recreation, NMSU, greeted the committee in the Reduced Gravity and Biomechanics (RGB) Laboratory. The professors told the committee about the wide variety of research projects conducted in the engineering and human performance departments at NMSU and stressed the levels of interdepartmental cooperation and communication on research, in general, at the university. The professors showed pictures and videos of completed and ongoing research projects, and doctoral, graduate and undergraduate students demonstrated a number of research projects and devices.

Dr. Ma discussed the following research projects in his presentation to committee members:
- study of human performance and factors in zero- or reduced-gravity environments;
- technology to assist mobility rehabilitation;
- prediction and prevention of fall risk in older adults;
- mathematical modeling and simulation of human bodies;
- bio-inspired unmanned aerial vehicle design, guidance and control;
- unmanned aircraft systems autopilot system integration and testing;
- space robotics control for on-orbit servicing; and
- impact-contact dynamics modeling and simulation.

Dr. Wood talked about the following research efforts in his presentation to the committee:

- biomechanical analysis of gait and fall risk in seniors;
- biomechanical implications of obesity for injury in youth;
- prevention of childhood obesity and diabetes;
- literacy through movement;
- motor learning in sports and rehabilitation; and
- head injuries in college and high school athletes.

Members of the committee asked questions about and discussed:

- military support and use of the RGB Laboratory technology and facilities;
- use of the RGB Laboratory technology for rehabilitation;
- National Institutes of Health certification for human testing; and
- patenting unique technologies developed in university settings.

A motion was made and adopted to support the NMSU request to the Higher Education Department for approval of a Ph.D. degree program.

Spaceport America Status Report

Christine Anderson, executive director of the Spaceport Authority, updated the committee on the progress of Spaceport America. Phase one of the implementation of the spaceport is complete. Ms. Anderson explained that Spaceport America is set up to be a self-contained city, featuring a fuel storage depot, water storage and booster station, wastewater treatment plant, communications system and weather station. Additionally, she told the committee that UP Aerospace, SpaceX and Virgin Galactic are confirmed Spaceport America tenants and have flights from New Mexico scheduled in 2014 and 2015. Finally, Ms. Anderson reminded committee members that informed consent legislation was signed during the last legislative session, which expanded protections to keep New Mexico competitive in the commercial space industry.

Ms. Anderson told the committee that phase two of the implementation of Spaceport America is under way. The business model for the spaceport is based on two major lines of business, both essential for long-term success: 1) vertical and horizontal space launches; and 2) tourism. The spaceport is in the process of obtaining Federal Aviation Administration spaceport license recertification, enumerating operational policies and procedures for all spaceport facilities and completing the southern road. She said that the design of the visitor experience has been completed and construction of the visitor center is under way.

Ms. Anderson explained that Spaceport Authority marketing and outreach activities are taking place in earnest. In the past 12 months, the Spaceport Authority has participated in more than 50 media interviews and more than 20 media tours and has engaged in media visits with representatives from 18 countries. Media exposure and spaceport expansion have positively affected New Mexico's economy, creating more than 1,300 jobs for New Mexicans since its inception. An additional 1,003 jobs are projected for fiscal year (FY) 2016, and 1,624 jobs are

projected for FY 2018.

Members of the committee asked questions about and discussed:

- the schedule for the southern road pavement and infrastructure;
- office locations of Spaceport America tenants;
- frequency of launches from the spaceport;
- new industry and economic opportunities presented by an influx of visitors to Spaceport America; and
- other U.S. spaceports.

Renewable Energy Infrastructure Opportunities

Jim Witcher, geologist and consultant at Witcher and Associates, outlined technology and infrastructure opportunities for the use of geothermal energy in New Mexico. Mr. Witcher explained that there are conductive and convective geothermal systems in New Mexico. Conductive systems are characterized by their very deep and large reservoirs; greater salinity; suitability for large-scale power and desalination; applicability for brine disposal; stratigraphic reservoir; and higher cost and risk. Convective systems are characterized by their shallow and smaller reservoirs; suitability for direct-use and small-scale power; brackish water; structural reservoir; and lower cost and risk.

Mr. Witcher explained that geothermal energy systems have the potential to be used for electrical power and direct-use and ground-coupled heat pumps. These systems also have the potential to be used for desalination, copper and gold mining, oil and gas production, biofuel generation, greenhouse heating and aquaculture. In addition to the scope of use for geothermal energy systems, the capacity for geothermal energy far exceeds the capacity for other types of renewable energy resources in New Mexico, making it an especially enticing source of energy.

Mr. Witcher concluded his presentation by urging that the definition of "geothermal energy" in New Mexico be revisited. He advocated for sustained support for the New Mexico component of the national geothermal database at the New Mexico Bureau of Geology & Mineral Resources at the New Mexico Institute of Mining and Technology (New Mexico Tech) and for sustained university-based outreach for direct-use geothermal economic development.

Andrew Rosenthal, director of the Southwest Technology Development Institute (SWTDI) in the College of Engineering at NMSU, talked to the committee about the implications of photovoltaics (PV) and solar energy for New Mexico. Mr. Rosenthal explained that the SWTDI works to provide support for public agencies and private industries that choose to utilize PV and solar energy generation systems. He also discussed partnerships with the Navajo Tribal Utility Authority (NTUA) and Lennox Industries to illustrate the work of the SWTDI. Efforts of the SWTDI and NTUA helped to determine that PV is an effective solution to power remote homes and facilitated the purchase of more than 400 stand-alone PV systems from Sacred Power by the NTUA. The SWTDI's collaboration with Lennox Industries resulted in the Lennox SunSource solar-assisted heat pump becoming a catalog item for sale throughout North America. Additionally, Mr. Rosenthal highlighted that the SWTDI was awarded a

contract from the federal Department of Energy (DOE) to create, lead and consolidate all of the DOE's dispersed efforts in solar technology-related codes and standards. The SWTDI branded the contract with the name Solar America Board for Codes and Standard (SolarABCs). Originally awarded as a five-year, $4.2 million program, SolarABCs later received an extension to become a six-year, $5 million program.

Patricia Sullivan, assistant dean of the College of Engineering at NMSU, told the committee about the New Mexico Green Grid Project. The project is a state initiative that aims to set up a delivery system for an innovative approach to electric generation, distribution, storage and management. Generation methods include PV and solar systems. NMSU engages students in the creation of this new technology by including it as course work in power engineering classes. Additionally, faculty, businesses, farmers and ranchers are working to implement elements of the project through extension programs around the country. Commercialization and technology transfer is being facilitated through the New Mexico Small Business Assistance Program and partnerships with LANL and Sandia National Laboratories.

Committee members' questions followed, and the following points were raised:

- the connection of the SWTDI with the Mesa del Sol project at Public Service Company of New Mexico;
- use of geothermal power in desalination;
- potential deterioration of geothermal resources in New Mexico;
- amount of power generated by geothermal energy; and
- comparison of geothermal power and greenhouse costs.

Alamogordo Desalination

Matt McNeile, city manager of Alamogordo, gave a presentation to the committee on the history and update of the Alamogordo Regional Water Supply Desalination Project. Mr. McNeile told the committee that Alamogordo differs from most municipalities in New Mexico because the majority of its potable water supply comes from surface water. The city collects surface water from the Sacramento Mountains and Bonito Lake and collects ground water from the La Luz well field. Water is not collected from these sources without difficulty, however, and historically, it has been difficult to produce enough potable water to meet the needs of the growing city.

Mr. McNeile told the committee that the city began carefully assessing the existing water uses and looking for new sources of water in the mid-to-late 1990s. During this study and analysis period, the city adopted aggressive ordinances limiting water use and instituted water-use surcharges. These efforts helped to reduce per capita water usage in the 1999-2001 period to approximately 140 gallons per capita per day (gpcd), a 54% decrease from 260 gpcd in the early 1990s. Mr. McNeile explained that while progress was made with conservation, the city was aware that conservation alone could not provide an adequate water supply for both present and future needs.

The city considered many options for new water supplies and concluded that the only way to get a large drought-resistant appropriation without decades of applications for small appropriations and/or transfers was to pursue a well field that would divert brackish ground water in conjunction with a desalination facility. The city commissioned a study of possible brackish water sources. Ultimately, the Snake Tank well field was selected because of the:

- availability of unappropriated brackish ground water;
- large quantity of ground water in storage;
- relatively even and acceptable brackish water quality;
- opportunity to capitalize on the gravity flow of water to deliver water to the treatment plant; and
- Snake Tank well fields location outside the Tularosa Basin administrative criteria area.

Mr. McNeile told the committee that a location has been selected for the desalination facility. The facility will be constructed in stages to phase in capital costs. A final build-out capacity is estimated to be 2.8 million gallons per day of potable water. The plant is intended to be a "peaking" facility, or drought reserve, to activate when surface flows and existing ground water are insufficient to meet the city's growing needs. Mr. McNeile told the committee that the desalination project will cost an estimated $54 million. He stressed that the project is not only important to the city, but also to the region and the continued viability of Holloman Air Force Base. The city's desalination project is expected to work in conjunction with the Tularosa Basin National Desalination Research Facility in equipping the city's plant and using next-generation products and advances in desalination technology. The desalination facility also has the potential to be used by other regional entities in need of commercial, industrial or municipal water supplies. Mr. McNeile concluded his presentation by stating that the most pressing issues Alamogordo faces in moving forward to make the desalination facility a reality is the completion of the Department of Environment's permitting process and funding assistance to complete the construction of the project.

Dr. Sam Fernald, director of the New Mexico Water Resources Research Institute (NM WRRI), gave a presentation to the committee on the mission of the NM WRRI, NM WRRI's research on desalination and future NM WRRI research projects and applications. Dr. Fernald explained that it is the mission of NM WRRI to support water research at NMSU, the University of New Mexico and New Mexico Tech. The institute serves as a model for institutes nationwide. Regarding NM WRRI's desalination research, Dr. Fernald told the committee that the five key elements of a desalination system are intakes, pretreatment, desalination, post-treatment and concentrate management. The energy for desalination can come from a variety of sources such as thermal, electrical, chemical and physico-chemical.

Dr. Fernald briefly discussed past NM WRRI research. The projects he expounded upon were capacitive deionization, high recovery reverse osmosis, pressure retarded osmosis and reverse osmosis. Ongoing research projects that Dr. Fernald addressed included PV reverse osmosis, ion exchange for turning concentrate water into marketable products, radial deionization and agricultural use of concentrate. Ongoing and future research may have

applications for gravity-based water changes, updated ground water assessments and desalination technologies.

Committee members' questions followed, and the following points were raised:

- funding sources covering the cost of the Alamogordo desalination project;
- unintended consequences of the Alamogordo desalination project;
- unreliability of Bonito Lake and the pipeline;
- disposal of removed solids (wastes); and
- implications for New Mexico of NM WRRI policy, research and applications.

Experimental Program to Stimulate Competitive Research

Mary Jo Daniel, associate director of the New Mexico Experimental Program to Stimulate Competitive Research (NM EPSCoR), told the committee that NM EPSCoR is a partner with the National Science Foundation to improve research and development competitiveness through the state's academic science and technology infrastructure. NM EPSCoR is a university-oriented program, with the goal of identifying, developing and utilizing academic resources that will lead to increased research and development competitiveness.

Ms. Daniel told the committee that partnerships among universities, community colleges, national laboratories and private industries not only improve research infrastructure, but also strengthen New Mexico's science, technology, engineering and math (STEM) work force. Since 2001, NM EPSCoR has bolstered New Mexico's academic research capability in:

- nanoscience;
- biomedical engineering;
- ecological research;
- hydrology and aquatic chemistry;
- climate science and modeling; and
- socioeconomics.

Ms. Daniel told the committee that NM EPSCoR's new project, Energize New Mexico, focuses on realizing New Mexico's potential for sustainable energy development. The vision of the project is to help New Mexico lead the nation in:

- harnessing and promoting sustainable energy resources;
- cultivating a well-qualified STEM work force; and
- developing a sustainable culture of entrepreneurship and innovation.

Infrastructure and activities of Energize New Mexico are designed to support shared-use equipment, engage new faculty and support the STEM pipeline. Research findings will be communicated broadly through new partnerships with New Mexico's museum network, a citizen-centric-designed web portal and vibrant experiential programs targeting K-12 students.

Energize New Mexico's funding is allocated for research (65%), education and outreach (22%), cyber infrastructure (8%) and administration (5%). Research component funding is allocated for:

- bioalgal energy (28%);
- solar power (16%);
- geothermal energy (12%);
- osmotic power (12%);
- social and natural science nexus (12%);
- uranium transport and site remediation (12%); and
- seed awards (8%).

Peter J. Lammers, research professor and technical director of the Algal Bioenergy Program at NMSU, discussed the NM EPSCoR BioAlgae Energy Program. Mr. Lammers explained that the program is attempting to answer the following scientific questions.

- Can inexpensive, scalable, close bioreactor designs maximize biomass productivities with heat-tolerant algae in summer and cold-tolerant strains in winter with minimal water consumption and cultivation costs while achieving a net positive energy balance?
- What species or community characteristics and cultivation conditions best promote stable, reproducible, large-scale production of algal biomass and also harmonize with: 1) design specifications for algal cultivation; 2) extraction and conversion processes for high-, mid- and low-value products; and 3) quality-assurance and quality-control specifications for fuels and co-products?
- Can wastewater sources safely offset nutrient requirements at large scales, and how do associated scale-up logistics, reactor design and operation affect output water quality to meet process recycling and discharge requirements?

Mr. Lammers told the committee that the BioAlgae Energy Program has several commercialization targets: energy-positive municipal wastewater treatment; energy-positive dairy and cheese manufacturing wastewater treatment; and renewable hydrocarbon fuel production using water and carbon dioxide from petroleum extraction.

Members of the committee asked questions about and discussed:

- the BioAlgae Energy Program's interaction with Sapphire Energy;
- the susceptibility of algae to disease and to population crashes; and
- the BioAlgae Energy Program's level of collaboration with LANL and Sandia National Laboratories.

The committee recessed at 5:30 p.m.

Friday, October 18

Telecommunications Regulation

Sandra Skogen, Office of the General Counsel and associate general counsel of the Public Regulation Commission (PRC), and Mike Ripperger, Chief, Telecommunications Bureau, PRC, told the committee about key statutes to New Mexico telecommunications legislation and

explained the regulation of incumbent local exchange carriers (ILECs) in New Mexico. Ms. Skogen and Mr. Ripperger discussed:

- the New Mexico Telecommunications Act, enacted in 1985;
- the Rural Telecommunications Act of New Mexico (RTA), enacted in 1999;
- the alternative form of regulation legislation, enacted in 2000;
- mid-size carrier legislation, enacted in 2004;
- 2005 amendments to the RTA; and
- 2013 amendments to the RTA.

Ms. Skogen and Mr. Ripperger provided committee members with a chart detailing what they see as disparate regulation of ILECs in New Mexico. The chart includes carrier types, rate regulation, tariff changes, service quality, investment, consumer protection and enforcement.

Members of the committee asked questions about and discussed:

- the history of legislative proposals to reform telecommunications regulation;
- the responsibility of telecommunications carriers to provide services;
- the balancing of shareholder and consumer interests;
- notices for residential rate increases for services;
- penetration levels of competitive local exchange carriers;
- the effectiveness of the RTA;
- the relevancy of the number of lines served by ILECs to legislation;
- clarification of PRC rulemaking authority; and
- relaxing regulations.

Senator Padilla presented committee members with a discussion draft of a senate bill that would further amend the RTA. A motion was made, seconded and unanimously approved to suspend a vote to endorse the bill until the next interim committee meeting on November 18-19, 2013.

Agriculture Technology Advances/Technology Improvements in Agricultural Water Use

Dr. Fernald spoke to the committee about the Rio Grande Basin Initiative (RGBI). Dr. Fernald explained that the RGBI is a sampling of irrigation efficiency research in New Mexico and Texas from 2003 to 2012 and has nine focus areas: 1) irrigation district studies; 2) irrigation education and training; 3) institutional incentives for efficient water use; 4) on-farm irrigation system management; 5) urban water conservation; 6) environment, ecology and water quality protection; 7) saline and wastewater management and reuse; 8) basinwide hydrology, salinity modeling and technology; and 9) communications and accountability. To date, five of the focus areas have been analyzed. Dr. Fernald concluded his presentation by summarizing the RGBI's findings thus far.

- Existing efficiency programs include technology, policy and collaboration.
- There is room for expanded efficiency programs.
- Efficiency varies by location in the Rio Grande Basin from upstream to downstream.
- Research will pave the way for implementation of programs.

Dr. Phil King, professor and associate department head of the Department of Civil Engineering at NMSU, talked to the committee about technical advances in water-use efficiency with respect to application efficiency. Dr. King explained that application efficiency refers to the efficiency of the irrigation application systems; it is the ratio of irrigation water consumed by the crop to the water applied to the crop from the farm ditch or pipeline. Dr. King further explained that there are two classes of irrigation systems, and both systems benefit from conservation technology research. These systems are described as follows:

- surface irrigation systems apply water to the soil surface at the head of the field and allow the flow to advance to the tail; and
- pressurized irrigation systems rely on pipes to distribute water throughout the field and are classified as either sprinkler or drip systems.

Dr. King also discussed the differences and benefits of "dry water" conservation and "wet water" conservation.

Members of the committee asked questions about and discussed:

- the uncertainty of water rights adjudications;
- regional water planning funding;
- the statewide "water budget"; and
- water marketing.

Adjournment

The meeting adjourned at 12:15 p.m.

MINUTES
of the
FIFTH MEETING
of the
SCIENCE, TECHNOLOGY AND TELECOMMUNICATIONS COMMITTEE

November 18-19, 2013
Room 322, State Capitol

The fifth meeting of the Science, Technology and Telecommunications Committee (STTC) was called to order by Representative Carl Trujillo, chair, on Monday, November 18, 2013, in Room 322 of the State Capitol.

Present
Rep. Carl Trujillo, Chair
Sen. Michael Padilla, Vice Chair
Sen. William F. Burt (11/18)
Rep. Kelly K. Fajardo
Rep. Roberto "Bobby" J. Gonzales
Rep. Jason C. Harper
Sen. Linda M. Lopez (11/18)
Rep. Debbie A. Rodella
Rep. James E. Smith (11/18)
Rep. Luciano "Lucky" Varela (11/18)
Rep. Monica Youngblood

Absent
Sen. Bill B. O'Neill
Sen. John C. Ryan

Advisory Members
Sen. Carlos R. Cisneros (11/18)
Rep. Stephanie Garcia Richard (11/19)
Sen. Richard C. Martinez
Rep. Bill McCamley
Rep. Jane E. Powdrell-Culbert
Rep. Don L. Tripp (11/18)
Sen. Ron Griggs
Sen. Timothy M. Keller
Sen. Steven P. Neville
Sen. William H. Payne
Rep. Nick L. Salazar
Sen. Peter Wirth

Guest Legislator
Rep. Thomas A. Anderson

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

Staff
Gordon Meeks, Legislative Council Service (LCS)
Ralph Vincent, LCS
Renée Gregorio, LCS

Guests
The guest list is in the meeting file.

Handouts

Handouts and other written testimony are in the meeting file.

Monday, November 18

Call to Order and Introductions

Representative Trujillo called the meeting to order, and committee members introduced themselves to the audience.

Telecommunications Reform

Senator Phil A. Griego, who has been asked to carry the legislation, spoke in support of the telecommunications bill before the committee, saying that it is a good free-market bill that does a lot for consumers in urban and rural areas.

A panel presented pros and cons on this legislation. Leo Baca, lobbyist with CenturyLink, said the bill is designed to create retail parity. He said that the bill amends existing law that applies to rural telecommunications and has that law apply to all companies without affecting the rural companies. He pointed out that the Rural Telecommunications Act of New Mexico has been in effect successfully since 1999. This amendatory language would provide for less regulation for CenturyLink and Windstream, and Mr. Baca opined that the legislation would help drive economic development in the state. He said that the bill is not about wholesale or interconnection issues and does not make any changes to the State Rural Universal Service Fund (SRUSF). He stated that the legislation would extend benefits established for rural areas to the rest of the state. Mr. Baca detailed some language changes related to issues brought up at the STTC meeting in Las Cruces; in particular, he brought forth an amendment to the bill as drafted that would further appease and protect rural telecommunications companies by ensuring that their regulatory burden is not increased. In response to a question about amending Chapter 63, Article 9A NMSA 1978, the New Mexico Telecommunications Act, rather than the Rural Telecommunications Act of New Mexico, Mr. Baca indicated that this had been tried in prior sessions without success. Also, Sandra Scoggin, general counsel, Public Regulation Commission (PRC), had spoken at the Las Cruces meeting; the main caveat was that the PRC has not formally taken up this bill for review.

Sam Ray of the New Mexico Exchange Carrier Group (NMECG) and a registered lobbyist, and Charlie Ferrell, executive director of the NMECG, gave an overview of the NMECG, an industry association made up of small rural telecommunications companies. Mr. Ferrell explained how the Rural Telecommunications Act of New Mexico, as passed in 1999, established a framework for the PRC to regulate smaller companies. He emphasized the importance of what the legislation then recognized, which was the need for disparate regulatory treatment between small rural companies and larger companies because of their size and the remote, and therefore high-cost service, they need to provide. He added that the Federal Communications Commission (FCC) also recognizes the need for such disparate treatment,

which exempts rural companies from certain obligations. He said that the NMECG companies have been able to provide excellent quality service at affordable rates because of reduced regulations. He cited one of the main reasons for disparate treatment being that the smaller companies often do not have staff attorneys or regulatory analysts, and the more regulation there is, the more these companies would have to turn to outside experts at a large cost. He added that other states, such as Nebraska, Minnesota and Montana, also recognize the need for differing treatment.

Jerry Fuentes, lobbyist for AT&T, stated that the company has no position on this bill. He spoke of trends in the wireless industry, the shift to internet platform (IP) networks for connectivity and how wireless use is becoming more prominent. He said that AT&T has invested $98 billion across the U.S. since 2008 and $175 million in New Mexico in wireless infrastructure. He stressed the importance and the benefits of moving toward IP networks to ensure consumer protection, innovation in new technologies, job growth, meeting consumer demand and achieving widespread broadband service.

Carol Clifford, an attorney and lobbyist for tw telecom, inc., spoke about the three impacts she sees this legislation having on the regulatory services in the state. It would: (1) eliminate oversight of business services for CenturyLink; (2) expand CenturyLink's access to the SRUSF; and (3) repeal CenturyLink's carrier-of-last-resort responsibilities. This legislation would eliminate the requirement that CenturyLink prove effective competition, which is of great concern to tw telecom, she indicated. She also said that CenturyLink would have the incentive to lower service quality and raise prices under the changes proposed. She added that by placing CenturyLink under the same regulatory treatment as rural carriers, it would be able to gain greater access to the SRUSF and that rural carriers have special access for good reason because of the difficulty in providing service to rural communities.

Committee members brought up several questions, and the ensuing discussion included the following:

- concern over the risk to customers in rural areas;
- CenturyLink has taken exception to the 70% business market share calculation, which it says is a policy question;
- CenturyLink stated that it does not want to reduce services and raise rates;
- CenturyLink operates in 37 states; some of those states provide regulation through rules, some through legislation;
- tw telecom builds fiber networks in Rio Rancho and Albuquerque, has invested $114 million in its network and opposes the legislation as drafted;
- the most recent statute dealing with effective competition was in 1985, and it does not take wireless services into account;
- the PRC stands by its effective competition determination, and the PRC found that CenturyLink met its burden of proof for packaged and bundled services, but it failed to meet the burden of proof for business services;
- there were several questions on the effect of this legislation on rural consumers and on CenturyLink's access to the SRUSF;

- this legislation would give CenturyLink immediate regulatory relaxation;
- residential rates in rural areas could be affected with changes to the SRUSF and the loss of disparate language for smaller carriers;
- CenturyLink stated that, of course, it would not provide services at no cost, that it could not guarantee that rates would not be increased and that it has a DSL product at present that is not regulated by the PRC but costs the same for urban and rural residents;
- regarding regulation around the quality of service provided, the NMECG reported that today's regulations allow for lower cost and take less time; tw telecom reported that it is also subject to the same 10-day filing and has to answer to the PRC on consumer complaints; CenturyLink has specific service quality requirements with fees imposed if it messes up;
- the NMECG stated that losing disparate treatment could limit its ability to borrow, and if regulations change and require more from small companies, they could not afford it;
- tw telecom will expand its network and build more fiber connections to its customers;
- CenturyLink would have more incentive to invest in expansion if this legislation passes;
- through this legislation, CenturyLink would not have service quality requirements; would gain flexibility in its business rates; and would be better able to compete with tw telecom; and
- there is a need to be cautious about protecting rates and consumers and entities serving rural areas.

No motions were made by the STTC on this piece of legislation.

Renewable Energy Storage Task Force

After introducing all the people associated with the Renewable Energy Storage Task Force (RESTF), Jeremy Lewis, state energy program manager, Energy, Minerals and Natural Resources Department (EMNRD), reviewed specifics around the RESTF formed by the EMNRD as a result of direction in House Joint Memorial 10 and Senate Joint Memorial 43 of the 2013 legislative session. As per those memorials, the RESTF developed a report for the STTC that gives an inventory of existing federal and state renewable energy storage policies and regulations and that suggests legislative and regulatory options. With its diverse membership and strong participation from electric utilities, the group had four meetings, two each in Santa Fe and Albuquerque. Mr. Lewis highlighted other states' initiatives, identified New Mexico's market for energy storage and spoke of the options arrived at by the collaborative efforts of the RESTF. Among these options are:

- creating an energy storage advisory council;
- coordinating with other western states in identifying regional energy storage possibilities;
- continuing research and development in partnership with New Mexico's national laboratories, universities and utilities;
- devising a large-scale energy storage demonstration project;

- examining time-of-use rate expansion;
- looking at modifications to New Mexico's production tax credit; and
- investigating funding sources or cost-recovery options for renewable energy storage projects.

Mr. Lewis said that the energy storage landscape is changing rapidly and that there is strong support for continuing to explore these energy storage issues. (See the RESTF report in the handouts for details of the RESTF's evaluation of energy storage.)

Committee members brought up several questions, and the ensuing discussion included the following:

- the New Mexico Renewable Energy Transmission Authority (NMRETA) is part of the RESTF because energy storage is part of its mission and it provides a good resource in helping to expand renewable transmission;
- rather than expanding the NMRETA's role, which would require more funding, a recommendation was made to look at ways to fund large-scale transmission projects;
- the RESTF's efforts were largely focused on reviewing existing technologies; and
- the EMNRD has the staffing and expertise to continue the work of the RESTF, and New Mexico brings the strength of having two national laboratories in its midst to move forward with renewable energy options.

NMRETA Status Report

Jeremy Turner, executive director, NMRETA, outlined the NMRETA's mission, which involves planning, financing, developing and acquiring high-voltage transmission lines and storage projects. The NMRETA has the ability to issue debt, and its projects need to include 30% of their power from renewable sources. Mr. Turner reviewed the state's electricity generation by source and the electrical grid pattern in the U.S. He said that most of power is headed west, to California, which is also the best market because of price and demand, and New Mexico can take advantage of opportunities to sell to California because of its location. Mr. Turner stated that one-third of the electric power generated in New Mexico is exported out of state.

Mr. Turner said that there is less market volatility in renewable energy production and that planned coal retirements equal over 7,200 megawatts — 5,000 megawatts from nine western states plus 2,220 megawatts from one California plant. Mr. Turner indicated that New Mexico needs a power distribution system, and if it can set up the right transmission system, New Mexico can be a major exporter of energy resources.

Projects that the NMRETA has supported include High Lonesome Mesa (a Torrance County wind farm); Blue Mesa Energy, LLC (an eastern New Mexico wind farm); Lucky Corridor, LLC (a line between Taos and Farley); Centennial West Clean Line (a line from New Mexico to California); and Western Spirit Clean Line (in central New Mexico). (See handout for details of these projects.) Mr. Turner stated that the NMRETA has no statutory ability to make others work with it to coordinate the transmission of energy.

Committee members brought up several questions, and the ensuing discussion included the following:

- two of the four Public Service Company of New Mexico coal plants in the Four Corners area will close down;
- the first phase of the Tres Amigas project is completed, and the project is on track;
- the NMRETA is limited in its resources and does not work with all communities on their development projects;
- communities seeking assistance should be directed to the utility companies first, then the New Mexico Finance Authority and the NMRETA;
- in terms of funding requests, in the last legislative session, the NMRETA asked for $395,000 and received $250,000; this session, it is requesting $500,000, and if the NMRETA can get $375,000 that is recurring, it would consider itself successful;
- companies coming to New Mexico are not required to work with NMRETA; for example, Tres Amigas has been before the NMRETA board, but it works independently, and the NMRETA would also like to work with SunZia and others; and
- the NMRETA should be a coordinated, one-stop shop and clearinghouse for the process of building transmission and storage facilities.

State Investment Council (SIC) Technology Investments in New Mexico

Steven K. Moise, state investment officer, began by saying that the permanent funds are experiencing new highs. The Land Grant Permanent Funds (LGPF), for example, are valued at $13 billion, and the Severance Tax Permanent Fund (STPF) is at $4.4 billion. As of September 30, the SIC assets under management totaled $17.8 billion. Mr. Moise highlighted changes needed to the SIC statutes to bring it into alignment with other institutional investors in the state and in the U.S. Among these are to increase the standard of care requirement for the LGPF, remove the 15% cap on international stocks and bring the SIC rules into alignment with the rules for the Public Employees Retirement Association and the Educational Retirement Board and other investors. He also reviewed ways to increase the inflows into the STPF.

Brian Birk, managing partner at Sun Mountain Capital, who advises the SIC, said that financial returns have improved since 2004, when the New Mexico Private Equity Investment Program (NMPEIP) started to be managed with financial returns as the primary focus. The NMPEIP does not directly invest in companies but, rather, into venture capital funds that are then invested into companies. Mr. Birk stated that there is capital available to make new commitments, and the NMPEIP funds and portfolio companies are making good progress. He stressed the dramatic change in the NMPEIP's performance, which is now in alignment with national benchmarks, earning a return comparable internationally for venture capital funds. He highlighted the NMPEIP's impact on the state in the creation of jobs and investment in New Mexico-based companies.

Mr. Birk gave a brief overview of some of the portfolio companies, such as Exagen Diagnostics, Inc., which does diagnostic testing for lupus and other related diseases, for which up to $35 million has been invested, including $30 million from outside of New Mexico. Sun

Mountain Capital was attracted to this company because of its performance. ZTEC Instruments was acquired by LitePoint at a significant financial gain from the NMPEIP, and LitePoint plans on expanding its New Mexico work force.

Mr. Birk mentioned the broad scope and investment amounts of the NMPEIP's companies by sector. In summarizing the impact of the NMPEIP, Mr. Birk said that the portfolio is diversified, and for every $1.00 invested into venture capital, $6.40 is earned. He added that in terms of the economic impact on New Mexico, different companies were reviewed on a quarterly basis, and there is nearly a $50 million per-quarter impact to the state, which represents a substantial impact to the general fund. At present, there are 1,367 full-time jobs with an average yearly salary of $67,000 in the state.

In summary, Mr. Birk stated that new commitments and funds are being evaluated, financial returns are improving steadily and the NMPEIP is continuing to have a positive impact on New Mexico's economy.

Committee members brought up several questions, and the ensuing discussion included the following:

- as long as people charged with making investments are fiduciaries, then there is qualified care and no need for a cap on investments;
- different programs exist for entrepreneurs to get bridge funding; there is a need to find seed investors, and the state has active networks for this;
- the SIC does not look at individual investments, but it hires professional fund managers to accomplish this on its behalf;
- the improvement that is being seen with SIC's investments is due to many factors, including changes in strategy and management, moves in the market and broad diversification of assets;
- legislation is being looked at that relates to the model presented to the STTC at New Mexico State University that would provide early help to investors and equity in the investment for the state;
- the SIC and Sun Mountain Capital agree that with the right governance and quality assurance, equity investments can be made successfully;
- New Mexico lost an opportunity for a large-scale economic development project with Apple that was one of the largest ever offered in the country, and there is a need to put together an incentives package so that New Mexico can be on a level playing field with its peer states, where flexibility and the ability to move quickly provide a competitive advantage that New Mexico needs; having a closing fund or a pool of capital or incentives to match the needs of these companies is necessary; and
- there need to be "clawbacks" in place in any package that deals with the minimum number of years a company commits to staying in the state once a deal is struck.

New Mexico Broadband Overview

Gar Clarke, broadband program manager, Department of Information Technology (DOIT), stated that New Mexico used to be one of the bottom-performing states and now has one

of the top-five performing broadband programs in the nation. He gave an overview of federal funding received, which amounts to $6 million with the state match added to it, and it is used for mapping, planning, capacity building and technical assistance.

Mr. Clarke said that DOIT staff go out twice a year to harvest data from providers, which include enhanced 911 data and doing speed tests of service. As part of the capacity-building framework, he mentioned that there is a strong executive committee as well as a broadband working group (BBWG) made up of 30 individuals representing different business sectors throughout the state. The BBWG ensures that the state's interest and the public interest are represented. Mr. Clarke said that a fabric is also being developed to keep state agencies informed, although this needs to become a more formal process of engagement.

Among the technical assistance projects that Mr. Clarke spoke of are videos for educational purposes, public internet training and access, a database with all institutions in the state where internet access is available and a train-the-trainer program that is nationally known and includes broadband pilot projects at pueblos and in the Navajo Nation.

Mr. Clarke indicated that a statewide strategic plan will be completed in the latter part of 2014. He added that New Mexico needs to get organized so that it does not continue to lose out on funding opportunities. He reviewed the composition of the BBWG, which includes experts from different sectors of government, the telecom industry, federal loan programs, tribal entities, governmental and community organizations and technology councils. He also spoke of the development of a broadband map gallery, which is done by regions and might be expanded to include legislative districts. (The New Mexico broadband map can be found online at http://nmbbmapping.org/mapping.) Another tool for planning is a community anchor site assessment, or CASA, which serves providers and includes public and private facilities that require broadband services. In terms of a regional adoption component, two regions have been selected for pilot projects: the Northeast Economic Development Organization and the Southwest New Mexico Council of Governments. Mr. Clarke indicated that the regional pilots will help to develop a solid process of bringing broadband to communities.

The draft recommendations that the BBWG derived that are currently being vetted by the executive committee and state agencies fall into the following major categories: cross-cutting (pursuing a state purchasing cooperative, smart funding, matching funding, a centralized network and tribal support); education (a statewide educational network, technical support for smaller school districts, professional development and online learning); health care (coordination of telehealth, an infrastructure fund, fair reimbursement rates, professional development and infrastructure); and economic (education and outreach, strategic planning and partnerships). He added that most funding sources require an 80/20 cash match and funds are needed to get these projects going. Other needs include developing collaboratives to purchase equipment and services together, looking at different mechanisms to fund projects, having a centralized network and expanding public-private possibilities.

Committee members brought up several questions, and the ensuing discussion included the following:

- there is ongoing work to get all libraries in the state on board with broadband, including state networks;
- 18 school districts are participating in establishing their own recurring fund for technology, and Taos schools generated $500,000 annually;
- there is a lot of communication between the Public Education Department and the DOIT regarding broadband requirements and Partnership for Assessment of Readiness of College and Careers assessments for schools; and
- the state needs a funding mechanism for its broadband network needs, and there has to be clarity and coordination between what private companies are providing and what the state is developing.

Think New Mexico Jobs Initiative

Fred Nathan, director, Think New Mexico, and Jason Espinoza of Think New Mexico gave the committee an overview of the job crisis legislation that Think New Mexico is bringing to the legislature. Mr. Nathan said that his organization works on one topic at a time. Last session, it was PRC reform, and this session seems to be the right time to work at strengthening and diversifying the private-sector economy, even if this is not politically achievable. Mr. Nathan reported the loss of 37,000 jobs in New Mexico, with 14% underemployment and unemployment in the state. He said that Think New Mexico staff members are not experts in this area, but they spoke to the experts, and an enormous amount of research has been conducted, notably by the Ewing Marion Kauffman Foundation in Kansas City, Missouri, which focused on entrepreneurship and economic development. The research shows that many states have underperformed, and legislatures and governors should focus on creating a positive climate for all businesses.

Mr. Nathan said that two-thirds of all businesses started since 1980 have been in the science, technology, engineering and mathematics (STEM) field. He added that immigrants tend to be disproportionately entrepreneurial, with 40% of Fortune 500 companies started by immigrants or children of immigrants. He said there was speculation about what would occur if these two populations — people interested in STEM fields and immigrants — were put together. One proposal Think New Mexico came up with because of the low enrollment of international students at state universities is to charge in-state tuition to international students who meet admission requirements and are interested in the STEM fields. Mr. Nathan told a story of an international student from Taiwan who came to New Mexico and stayed, enrolling at the University of New Mexico (UNM) and starting a web design business. He then was approached by Sushi King in Albuquerque to work on some point-of-sale software, which he created (pre-iPad), and since that time, he has hired more than 60 people, many of them graduates from STEM fields at UNM. He ended by saying that the Kauffman Foundation urges states to be customer-friendly to attract new businesses.

Another idea Mr. Nathan discussed is a business portal or one-stop shop for new businesses. A third idea is to offer businesses a post-performance incentive, as Utah does. He stated that Think New Mexico is in the process of drafting legislation on all these ideas.

Committee members brought up several questions, and the ensuing discussion included the following:

- Utah has been able to attract businesses without a "carrot fund" up front by basing its incentives on performance rather than guesswork, and Utah developed a results-oriented tax incentive; and
- there is concern over not focusing on New Mexico's own students by providing a tuition break to international students.

The STTC recessed at 5:18 p.m.

Tuesday, November 19

Cable Industry Overview

Susan Bitter Smith, executive director, Southwest Cable Communications Association (which represents Arizona, New Mexico and Nevada), spoke of the services and relationships among the regional groups and operators in New Mexico that also provide service to other states. She said that the cable industry started out in the southwestern states as a mechanism of bringing broadcast signals to remote areas. What began as a re-transmission mechanism of broadcast signals in the 1950s later added programming when many channels became available. Packages were put together that were unique to local areas and evolved around communities of interest, she added. In New Mexico, cable television operators are regulated and franchised by local municipalities or counties and also regulated by the FCC. Standards are established that relate to customer service and technical operation, but not programming. She concluded by saying that cable is controlled locally, coupled with federal standards.

Ms. Smith said that in the 1980s, the cable industry was engaged in adding video channels, but at the present time, it is much more focused on broadband services. She said the mission of the cable industry is to continue to increase its penetration in rural areas with a wide range of services. She stated that cable operators pay franchise fees to local communities as well as sales tax and property taxes that benefit municipalities and counties across the state.

Among the challenges that Ms. Smith cited are establishing standards on privacy. She said that federal law precludes releasing customer lists to outside sources. There are also programming cost challenges that need to be balanced with customers' ability to pay.

Chris Dunkeson, general manager of Comcast New Mexico, said that the company is celebrating its fiftieth anniversary and has operated in New Mexico since 1999. Comcast brought broadband access to many locations that did not have it, he added, such as Silver City, Deming and Taos. The company is proud of its "internet essential" program, which offers $9.95 internet access for families who qualify for the federal school lunch program, and 4,000 families

have been connected through this program. He stated that the company is also focused on helping to drive economic development outside of Albuquerque.

Jane Shanley, general manager of Cable ONE, said that the company provides service to 54,000 homes in Rio Rancho and Roswell, with more than 21,000 customers. It offers cable, internet and telephone service in these areas. Ms. Shanley stated that the company has a strong focus on its broadband product. It also offers high speeds though infrastructure rebuilds and upgrades and is upgrading its plant to increase capacity and add more high-definition channels. The company also has a strong focus on the business community and added 100 businesses this year. Cable ONE employs 43 people at two offices in the state, is active in chambers of commerce, including the Hispano Chamber of Commerce, and provides service to schools and fire and police departments as a way of giving back to the communities it serves.

Committee members brought up several questions, and the ensuing discussion included the following:

- Comcast has brought its "internet essential" program to 250,000 homes nationally;
- although some costs could be alleviated, especially in rural areas, when putting fiber and cable into the ground by requiring that conduits be placed when roads are built, good communication is essential to ensure careful infrastructure development and makes sense for the area of deployment; and
- franchise documents for the cable industry and the local government are fairly complicated contracts that spell out fees, taxes, reporting, construction and audit requirements with many rules that work in concert with federal rules; each is different and reflects the needs of the local community.

Southeast New Mexico Nuclear Corridor

Former State Representative John Heaton gave his presentation on the nuclear industry in the southeastern part of the state. He mentioned that the active facilities include Waste Control Specialists, the URENCO plant and the Waste Isolation Pilot Plant (WIPP). Proposed facilities included International Isotopes, Inc.; the Eddy-Lea Energy Alliance (ELEA) interim storage site; and the generic thermal load studies-in-salt project. He added that the ELEA is made up of four governmental groups: the cities of Hobbs and Carlsbad, and Eddy and Lea counties. The ELEA bought 1,000 acres of land between Carlsbad and Hobbs and formed this joint venture. Mr. Heaton indicated that, two years ago, the ELEA decided that with a blue ribbon commission's recommendation about interim storage, the ELEA site was ideal for several reasons, including an existing immense rail system, a pre-existing scientific community, a repository only 12 miles away, supportive communities for nuclear projects, its remote location and geologic stability. The expected capacity for interim storage is at 40,000 to 60,000 tons, he said.

Mr. Heaton reported that risk assessments indicate that the risks at this site would be very low. He reviewed what spent fuel storage casks look like, how their construction can differ and how they are shipped, adding that there are three lines of defense in terms of radiation protection. He also stated that a new area of research is related to fuel integrity.

In citing the importance of interim storage, Mr. Heaton said that the U.S. Treasury will pay out $20 billion by 2020 because of lawsuits; then it will pay $500 million per year until 2048, when the first repository would be open. An interim storage facility would stop all of those payments, he stated. In addition, the U.S. Department of Energy needs interim storage for its defense program. Mr. Heaton also reviewed the economic benefits in the form of jobs provided for all aspects of an interim storage operation.

Among the advantages of conducting a salt defense disposal initiative at WIPP, Mr. Heaton cited time and cost savings as primary. He said that a lot of mining has already been done for this site, and the expectation is that this project would take seven years to accomplish, with hopes of receiving $7 million per year in financing for the next five years.

Because Xcel Energy is cutting off 500 megawatts of power from the cooperatives, small modular reactors (SMRs) are being looked at for power generation. Mr. Heaton said that four eastern New Mexico cooperatives are affected, as well as the western farmers group. Lea County has built a gas generator, he added, but the others will need 360 megawatts of power by 2022, when the final phase-out happens. SMRs are also being looked at to provide more power in the southwestern part of the state, where a tremendous growth demand in the oil-pumping business exists, he noted.

Mr. Heaton ended by saying that coal is diminishing as a power source and that there are 3,500 jobs in northwest New Mexico associated wtih coal plants and mining. He said that these jobs could be replaced by moving into other kinds of power generation, such as nuclear.

Committee members brought up several questions, and the ensuing discussion included the following:

- URENCO was the first nuclear power company to get a combined building and operations permit, which helps to expedite permitting and licensing processes;
- there is concern over whether anything is compromised in this combined building and operations permit, and there are assurances that the federal Nuclear Regulatory Commission (NRC) is tough and careful about licensing;
- of the 16 square miles of land at WIPP, only one-half mile is being occupied by waste, and one of the class 3 changes to the WIPP facility is to add two more panels;
- although there are no restrictions on the number of panels that can be incorporated at WIPP, any change in the original configuration of the repository involves obtaining a permit modification;
- the ELEA interim storage waste facility could hold between 40,000 and 60,000 tons of waste;
- the proposed interim storage site in Loving County in Texas could be viewed as competitive with the ELEA site, but the Utah site is a private site around which the state built a wilderness area to prevent shipments from going to the site;
- it is likely that the amount of legacy waste that could be shipped to WIPP would fill WIPP's total capacity, although transporting the waste at the Savannah River and Hanford sites would be extremely costly;

- more characterization of waste is required now than at the beginning of shipments to WIPP, when all the drums were ready to be shipped;
- WIPP has the capacity to handle all the transuranic (TRU) waste that exists in this country; the problem would come if more waste gets characterized as TRU than is currently known;
- WIPP takes defense waste; interim storage sites would take care of commercial nuclear waste;
- the defense nuclear waste must be cleaned up nationwide;
- the NRC application process for the ELEA interim storage site will take four years to complete, and then there would have to be a consent-based process and education across the state to avoid ending up like the controversial Yucca Mountain site;
- proactive moves the legislature could make in relationship to the nuclear industry include encouraging isotope manufacturing and power generation; adding nuclear power to the renewable portfolio standard, which was developed for clean energy; locating funding for a consent-based process and some financial help for interim storage or any other nuclear facility that might get developed; developing a commission and a technical subcommittee made up of national laboratory and university scientists and engineers to brainstorm together; and developing an implementation subcommittee for economic development;
- there is a need for interim storage across the country because of the cost of transporting nuclear waste;
- France generates 80% of its electricity through nuclear power and recycles spent fuel rods twice using the same system used by URENCO; France is also part owner of this centrifuge technology; and
- the STTC is interested in developing legislation next year so that development of the nuclear industry can continue.

Gateway Technology for Restoring Forests

Margo Covington, executive director, and Douglas Webb, both of Sustainable Communities/ZERI NM, Inc., along with Breece Robertson, Trust for Public Land, addressed the STTC on gateway technologies for forest restoration. These technologies help to restore watersheds, forests and economies and open up the use of many recently commercialized bioenergy technologies. Ms. Covington spoke about her organization's vision, which includes transforming local communities to be less dependent on taxes, revitalizing watersheds and creating a bio-based energy-industry sector.

Ms. Covington spoke about the importance of having solid information on how much of the forests need to be cleared to restore them and how crucial it is to know the details of quantity, quality, sites, time frames, energy technology and business plans so that financial institutions or grantors have the information that allows them to loan or grant money. She said this is not the current conversation at all. She delineated several urgencies related to wildfires burning the watersheds, specifically the Las Conchas fire, which burned 40,000 acres in one day. The state treats about 12,000 acres per year, and last summer, three New Mexico rivers were flowing with ash and debris. She said that the average cost to the state of wildfires is $360 million per year.

In addition, Ms. Covington stated that trees are growing faster because of warmer climates, with regrowth rates speeding up. More water is being used, less water is ending up downstream and more waste is created that needs to get cleared over time. She added that bioenergy technologies have become commercially proven, and there is an opportunity for New Mexico to create its own bioenergy industry. She gave as an example a 10 kilowatt to 20 kilowatt gasifier at Santa Fe Community College that uses wood chips and meets 85% of the college's peak heating demand.

Ms. Covington suggested turning around the high costs associated with fighting fires and thinning forests by creating jobs in a profitable business that would cost only $1.8 million and would create 500 jobs in five years using the gateway tool. She said that this would amount to $17.5 million per year in new jobs. She also said there are many strong partners on the team, and there is support from New Mexico's congressional delegation and from the Economic Development Department. Support is being sought from the Department of Environment and the EMNRD, as well as from the legislature, for this gateway technology assessment tool.

Committee members brought up several questions, and the ensuing discussion included the following:

- Representative Gonzales expressed interest in sponsoring the group's appropriation request because of the potential for economic development and a strong educational component;
- the U.S. Forest Service is on board with this technology, and the group has also reached out to the Sierra Club; and
- several environmental groups have worked together to identify 14 forest restoration principles, which will be posted on the organization's web site and sent to the STTC members.

Joint Meeting with the Legislative Finance Committee (LFC) on DOIT

Representative Varela called the joint meeting of the STTC and the LFC to order at 2:25 p.m to hear testimony from Secretary of Information Technology Darryl Ackley on the DOIT's budget. Secretary Ackley defined the DOIT as the state's enterprise information technology service provider and said that the department also houses the state chief information officer. He reviewed the services that the DOIT provides to state government, including planning and oversight of information technology (IT) projects and purchases and providing internet, radio, email, web, mainframe and hosting services.

In highlighting the DOIT's accomplishments, Secretary Ackley said that the DOIT maintains critical operations all day, every day; ensures no interruptions of service, even during loss-of-power incidents; has improved public safety communications and radio broadband; has created more reliable radio communications and provided internet services to rural and remote areas; and provides greater service at a reduced cost. He added that the state has been actively involved in developing a public safety broadband network and that New Mexico is the first state to successfully negotiate a lease with the First Responder Network Authority (FirstNet). He stated that, next week, he is going to Washington, D.C., to give a presentation on New Mexico's

project and that the state is gaining notoriety for its IT work. Other improvements have been made to customer service, bringing maturity and modernization to billing, accounts receivables and asset management. He said that the collaboration with municipalities and counties has increased and that there have been improvements to cybersecurity. He also mentioned that the state's web portal for providing near real-time fire information has been recognized by being a national award finalist. Secretary Ackley stated that New Mexico's Information Technology Commission (ITC) membership is nearly fully appointed, and a meeting of that commission is scheduled for December 16, at which time officers will be elected so that the ITC can begin to do business.

In citing the DOIT's goals, Secretary Ackley stated that the areas of improvement will continue to be around financial management, cost recovery and portfolio management. He said that this process is close to being automated through a telecom expense management suite, improved communications to agencies and streamlining of processes. Secretary Ackley mentioned the volume of fiberoptic cables being put in, with increased broadband capability in the state. He said that strategic broadband planning needs to be increased in importance to serve as a driver to education, health care, public safety and economic development. He also said that the DOIT is continuously looking for opportunities in rural areas to provide greater service at a reduced cost. In addition, he said, the modernization of public safety communications infrastructure, including radios and internet phone, continues. Also, the DOIT wants the State Human Resources Accounting Reporting Enterprise (SHARE) system to be sustainable and useful.

The DOIT charges back 99% of its budget, as dictated by federal regulations, he stated, as the DOIT needs to break even for services it provides as an agency. The DOIT's budget request is flat and totals $63 million, the largest portion being for the Enterprise system. In other funds, the DOIT received $1.9 million from the Department of Commerce for FirstNet planning. He said that the $5 million SHARE appropriation is still unspent and the DOIT has a $15.6 million capital outlay request in its infrastructure capital improvement plan for radio modernization. The DOIT received $1.5 million to do a comprehensive study, which is now completed.

Secretary Ackely ended with giving an update on the SHARE system, emphasizing that the way the state does business is completely reflected through the SHARE system because it is the financial system of records in which contracts, expenditures and payments are tracked. He reported that the DOIT has been working on upgrading the system, although in a briefing to the LFC at the end of the summer, the DOIT found that the upgrade was not going well. He said that the DOIT needs a "time out" to stabilize the system by stepping back, suspending the upgrade and working on replatforming the system without upgrades, but only with new hardware. Only $500,000 of last year's funding request of $5 million has been spent. He emphasized the importance of first making the system stable and integrated with hardware that is dependable. Secretary Ackley indicated that DOIT staff is working day and night, and the upgrades are currently on track. The DOIT still has the goal of completing this project by year's end.

Committee members brought up several questions, and the ensuing discussion included the following:

- the audit for the DOIT is on track, and audit modifications are completed;
- capital asset management continues to be a problem for the DOIT; it has implemented its asset model within the SHARE system;
- the DOIT still plans on using the $5 million appropriation as originally allocated after upgrades to the SHARE system have been finalized and the system stabilized;
- the ITC still has three vacant positions, and no chair has been appointed, even though the commission was formed three years ago; it is not meeting its statutory requirements;
- the SHARE system represents two distinct systems: one for financials and one for personnel management; the upgrades to each were staggered, with each upgrade taking 18 months;
- there is much concern from both committees over nonresponsiveness to requests made to the DOIT for information, including a matrix of the SHARE system and a request for any open implementations and regular status reports and information on any newly funded projects;
- the DOIT has a matrix that tracks projects on intent, obligated amounts, certified amounts, assessments of status and risk;
- Senator Padilla gave the DOIT a proactive invitation to give a status report every month in the next interim;
- the issues at the Tewa Building are more facility-related than a data-center issue; and
- there was a request for the committees to be given a copy of the presentation that Secretary Ackley is giving in Washington, D.C.

LFC staff members presented detailed information and an evaluation of state agency IT requests. The requests represent 13 agencies, which submitted 22 requests for a total of $46.8 million. In addition, general fund requests total $26.1 million; other state fund requests total $16.5 million; and federal funding requests total $4.2 million. (Details of these requests are in Attachment A of the handouts.)

Secretary Ackley indicated that state agencies present requests throughout the year that are reviewed by the DOIT, and then summaries are completed for each agency request, and the DOIT works with the Department of Finance and Administration while the LFC compiles its recommendation. The final request then gets voted on during the legislative session. Representative Varela suggested that the LFC recommendation be put together by the end of December rather than during the session; he also said that he would like to put the DOIT's budget on hold as he is not comfortable appropriating additional money to the SHARE system at this time.

Adjournment

There being no further business, the joint meeting of the STTC and the LFC adjourned at 4:00 p.m.

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