

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

**October 18-19, 2012
Centennial Engineering Center, University of New Mexico Main Campus
Albuquerque**

The fourth meeting of the Science, Technology and Telecommunications Committee was called to order by Senator Timothy M. Keller, chair, on October 18, 2012 at 9:10 a.m. in the Centennial Engineering Center at the University of New Mexico in Albuquerque.

Present

Sen. Timothy M. Keller, Chair
Rep. Roberto "Bobby" J. Gonzales, Vice
Chair
Rep. Jim W. Hall (10/18)
Rep. Conrad D. James
Sen. Linda M. Lopez
Rep. Debbie A. Rodella
Rep. Nick L. Salazar
Rep. James E. Smith
Rep. Luciano "Lucky" Varela (10/18)

Absent

Rep. Cathrynn N. Brown
Sen. William F. Burt
Sen. Dede Feldman
Sen. Phil A. Griego
Sen. Steven P. Neville

Advisory Members

Sen. Carlos R. Cisneros
Sen. Richard C. Martinez
Rep. Danice Picraux
Rep. Jane E. Powdrell-Culbert

Rep. Ray Begaye
Rep. Ben Lujan
Sen. William H. Payne
Sen. John M. Sapien
Rep. Don L. Tripp
Rep. Richard D. Vigil

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

Staff

Gordon Meeks, Legislative Council Service (LCS)
Ralph Vincent, LCS
Elizabeth Katz, LCS
Cassandra Jones, LCS

Guests

The guest list is in the meeting file.

Handouts

Handouts and other written testimony are in the meeting file and posted on the New Mexico Legislature web site.

Thursday, October 18

Chaouki Abdallah, Ph.D., provost and vice president for academic affairs at the University of New Mexico (UNM), welcomed the committee to the Centennial Engineering Center at UNM. He then gave the committee an overview of the engineering program at UNM. He informed the committee on the various ways that the program is supporting student success and is providing New Mexico with a skilled work force, which Dr. Abdallah stated will ultimately aid in economic development.

Centers of Excellence Status

Lisa Kuutila, president and chief executive officer (CEO) of the Science and Technology Center (STC) at UNM, introduced herself to the committee and directed the committee members' attention to a provided handout titled, "Rainforest in the Desert". She then gave an overview of the STC and all of its New Mexico-based start-up companies.

Next, Fred Mondragon, founding chair of the Governor's Science and Technology Advisory Committee (STAC), addressed the committee. He spoke about the history of the Centers of Technical Excellence (CTE), founded in the 1980s from state surplus funds with an initial appropriation of \$35 million. The CTE consisted of seven centers at three research universities, and oversight was provided by the STAC. Mr. Mondragon informed the committee that of those seven centers, two have thrived over the years, the Center for High Technology Materials (CHTM) and the Center for Energetic Technology Research (CETR).

The CHTM was created at UNM to promote economic development through research in optoelectronics, microelectronics and nanotechnology. Mr. Mondragon stated that the CHTM received initial state funding in the amount of \$9.1 million and was able to secure an additional \$178 million from outside grants and contracts. There are currently 48 professional and administrative staff members and more than 80 students employed at the CHTM, which has had 119 patents issued, 40% of which have been licensed, and 11 companies spun off through technology transfer. Mr. Mondragon informed the committee that as an arena for future growth, the CHTM has contemplated collaboration with the Centers for Integrated Nanotechnology (CINT), which is a joint venture of Los Alamos National Laboratory (LANL) and Sandia National Laboratories (SNL), and would require a \$4 million investment.

The CETR was created at New Mexico Institute of Mining and Technology to promote economic development in explosive materials and technology and subsequently merged with the Energetic Materials Research and Testing Center (EMRTC). The initial state investment was \$5 million, with a current revenue stream of \$25 million per year that is related to the CETR. Mr. Mondragon informed the committee that the CETR employs approximately 200 people a year with an additional 50 student employees and interns. As for plans for future expansion, Mr. Mondragon stated that the CETR is considering a \$2 million investment to expand offerings in

explosive research. Mr. Mondragon then made suggestions to the committee for possible future CTEs, including a center for astronomy and astrophysics, a center for astronomy and astrophysics, a center for space commercialization, a center for radioactive materials technology and a center for cybersecurity/asset management protection.

Questions and comments from the committee included:

- actions needed to retain companies that start up in New Mexico;
- the lack of State Investment Council (SIC) investment in seed companies since 2008;
- New Mexico's access to venture capital funds;
- how to ease the transition from high school to college and how to prepare students for a larger course load; and
- recommendations for the committee as far as action that can be taken.

Opportunities and Obstacles to Technology Transfer

Antonio Sandoval from Technology Ventures Corporation (TVC) addressed the committee and gave background on TVC. TVC is a nonprofit 501(c)(3) corporation whose aim is to commercialize federally funded technologies. He then outlined a few obstacles that face technology transfer, namely the broad definition of technology transfer, the execution of existing laws regarding technology transfer and the culture of entrepreneurship in New Mexico. Mr. Sandoval also discussed with the committee a couple of recommendations to encourage technology transfer in New Mexico. The first recommendation is to support and enact a technology development fund as suggested by a 2009 report developed by the Economic Development Department. He stated that the New Mexico Small Business Assistance Program should be expanded and further developed and that the creation of a provisional company should be considered. Mr. Sandoval informed the committee that this provisional company status would provide formal protection to people in the exploratory process of forming a new start-up.

Tom Brennan from LabStart introduced himself to the committee and reported on the companies that LabStart has founded in New Mexico. He then provided the committee with an overview of the LabStart process, which begins at the TRL 3 stage with laboratory technology, then moves on to the TRL 4, 5 and 6 stages with the identification of technology with commercial potential, due diligence, market assessment, prototype development and, finally, investment-ready technology.

Mr. Brennan then presented the committee with obstacles facing technology transfer, which include insufficient opportunity maturation and value creation, limited peer-to-peer interactions, insufficient available capital and a lack of clear mission uptake by the parent organization. The proposed solutions to these obstacles are an effort similar to LabStart at each national lab and university, a technology maturation fund and a proof of concept (POC) fund. He then outlined the specifics of the POC and technology maturation funds.

Questions and comments from the committee included:

- clarification on the POC fund and the amount of funding being requested;
- anti-donation clauses in statute and how that would affect funding;

- the significance of TRL levels; and
- federal technology transfer programs.

Path to Technology Leadership

Stuart Rose, Ph.D., founder of the BioScience Center, introduced himself to the committee and gave the committee background on the center. He stated that it is an incubator/accelerator for start-ups in the field of biotechnology. He informed the committee that the main difference between the BioScience Center and other incubators is that it is a for-profit incubator and, as such, will not be applying for grants from any government agencies. The overall concept is to provide low-cost office and laboratory space for start-ups and generate profit by helping make those companies successful, then cashing in on shares in said companies.

Dr. Rose then made a few proposals that the state could implement to help not only the BioScience Center, but every entrepreneur in New Mexico, and make New Mexico a place of innovation in the United States. His first suggestion was to implement an angel tax credit for non-New Mexico residents, and he provided the Minnesota Angel Tax Credit program as an example. He then proposed the creation of a new legal form of company entity, or a provisional corporation, that would allow start-up founders to begin to work without high liability. His last two suggestions were to invest in a start-up fund for New Mexico and to develop a better system for licensing intellectual property.

Questions and comments from the committee included:

- state requirements for start-up funds;
- further explanation of an angel tax credit for non-New Mexico residents;
- estimates of starting a new business in New Mexico;
- reimbursement of patent costs over time; and
- the relocation of New Mexico start-ups.

Approval of Minutes and Committee Business

A motion was made and seconded that the committee approve the minutes from the first, second and third meetings.

Energy Storage

Albert Migliori, Ph.D., LANL, and Representative Hall addressed the committee on the topic of possible energy storage legislation for New Mexico. Dr. Migliori stated that without energy storage, the renewable generation industry will reach market saturation at around 25%. He then explained the function of a utility grid electrical energy storage system (UGEESS) to the committee. A UGEESS stores excess electrical energy from the utility grid until needed and can deliver its stored energy to the utility grid on command. He informed the committee that there is an inevitable loss in storing renewable electrical energy and that the goal is to mitigate those losses and to increase the ceiling on renewable energy generation by providing renewable energy certificates (RECs) to qualified energy storage systems. Dr. Migliori stated that this would permit a UGEESS to count toward compliance with the renewable portfolio standard (RPS) on the same footing as solar and wind generation. He then presented the committee with possible

legislative proposals and how this new legislation would benefit the utility grid as a whole as well as New Mexico.

Representative Hall pointed out that there is no proposal for tax credits but only a proposal for the expansion of RECs. He stated that New Mexico has always encouraged renewable energy expansion, and two large components of that expansion are energy storage and the smart grid. If the legislature can provide incentives, New Mexico may see a future where PNM will build energy storage facilities that will enable the use of generated renewable energy.

Questions and comments from the committee included:

- the applicability of energy storage to individual homes;
- the technical improvements in battery and other storage technologies;
- participation in energy storage by rural electric co-ops;
- the location of storage facilities;
- time of use pricing;
- the encouragement of utilities to meet RPSs; and
- the position of the New Mexico Renewable Energy Transmission Authority (RETA).

Cluster Industries

Gary Goodman, CEO of Goodman Realty Group, introduced himself to the committee and stated that there is great potential in New Mexico to develop nanotechnology, the type of industry that can be seen in Albany, New York, in Silicon Valley in California and in the research triangle park of North Carolina. He attested that New Mexico has yet to capitalize on that opportunity. He pointed out that states surrounding New Mexico have been experiencing a job growth rate that is almost double New Mexico's. Mr. Goodman stated that one of the main reasons that New Mexico has been unable to capitalize on its potential is that it is a "state of separation". From his experience, the business community does not work with the political community or the scientific community, and LANL and SNL operate independently of the state. He also reported that this separation is beginning to subside.

Mr. Goodman informed the committee that what he believed New Mexico is in need of is a big idea to rally around. Again, he pointed to the ideas of Albany, New York, and Silicon Valley and suggested that New Mexico's big idea should be resource management. He stated that there is a great need for resource management, that it is a growth industry and that New Mexico is already a leader. He then spoke about cluster industries and stated that after one cluster has formed, related industries gather at the same location and form cultures that feed off of each other.

Questions and comments from the committee included:

- how New Mexico would go about encouraging cluster industries, whether through tax credits or incentives; and
- whether government should focus on providing infrastructure rather than tax credits.

International Comparison

Susan Keith, New Mexico-Israel Business Exchange (NMIBE), introduced herself to the committee and provided some background on her organization. She outlined the mission of NMIBE as raising awareness about Israel's innovative entrepreneurial activities within the state, creating a network of individuals and organizations interested in pursuing opportunities with Israeli businesses and organizations, encouraging collaborative relationships between New Mexico and Israel and improving infrastructure support for successful ventures. She outlined the factors that have contributed to Israel's success as well as some Israeli technologies that would be of particular interest to New Mexico. Finally, she summarized how the NMIBE supports collaboration between New Mexico and Israeli technology developers.

Lawrence Chavez, CEO, Lotus Leaf Coatings, presented the committee with a handout that made a comparison between Israel and New Mexico in the areas of innovation; global activity and exports; entrepreneurial activity and human capital; and access to capital. He then made a few recommendations to the committee. He suggested that New Mexico increase its entrepreneurial education and create an entrepreneurial environment. He also proposed that New Mexico facilitate technology commercialization and access to capital.

Next, David Abell, chief operating officer of TriLumina, addressed the committee and gave an overview of TriLumina's laser technology. He informed the committee that TriLumina's facilities are located at the STC at UNM, which has provided great building facilities at a price that could not be found elsewhere. With the help of the STC, TriLumina has been able to form the Manufacturing, Training and Technology Center, which has enabled it to grow and expand. He highly encouraged support of the STC and all it does for the scientific community. Mr. Abell concluded his presentation by informing the committee that a continued struggle for companies in New Mexico is to gain access to capital.

Questions and comments from the committee included:

- cooperation of the state in trade missions and conferences;
- specific advice from Israel;
- state investment rules; and
- Israel's resource management.

Connecting Technology and Economic Development

Dale Dekker introduced himself to the committee and stated that, as an architect and planner, he is seeing water become not only a national but an international issue in development, and he is placing before the committee a big idea, the Rio Grande Watershed Collaborative. He gave the committee statistics regarding water scarcity and outlined the challenges that businesses will face in the growing water shortage. He then reviewed regional New Mexico water issues and the opportunity surrounding those issues, namely a global research and development initiative focused on water, utilizing the Rio Grande watershed as a full-scale test bed for planning, research and new technologies. Mr. Dekker then outlined three factors that give New Mexico such a unique position in the water issue, the presence of the Rio Grande watershed, the location of the national laboratories and the proximity of a number of research and development universities. Finally, he addressed the preliminary efforts needed to undertake the formation of

the collaborative.

Questions and comments from the committee included:

- a discussion of SNL's role in water transfer and ground water storage;
- New Mexico's history of coping with drought; and
- water technology-based economic development.

The meeting recessed at 4:00 p.m.

Friday, October 19

Senator Keller reconvened the meeting at 9:10 a.m. and introduced Robert G. Frank, Ph.D., president of UNM.

UNM Economic Summit

Dr. Frank welcomed committee members to UNM and gave the committee an overview of his own personal background and goals for UNM. He stated that he would like UNM to be recognized as one of the great public research universities, and, to that end, UNM hosted an economic summit on September 21, 2012. For the summit, UNM brought in Victor Hwang and featured a recent publication of his, titled "The Rainforest: The Secret to Building the Next Silicon Valley". Dr. Frank outlined some of the most salient points of the rainforest model for the committee. He then reviewed some of the outcomes of the summit, which are to strengthen public-private relationships and communication between the community and the university, to realize a need for mentoring in the areas of entrepreneurship and start-ups and to partner with SNL to create new models for collaboration.

Dr. Frank then reviewed UNM's 120 Days of Listening Campaign, which ended on October 15, 2012. During the campaign, UNM was able to hear from internal stakeholders, the UNM faculty, staff and students. He outlined some of the themes of the campaign and UNM's plans for after the listening campaign. He stated that the UNM 2020 plan will roll out after November. The 2020 plan will capitalize on the richness of UNM and New Mexico to position UNM for the future; ask for the support of the legislature, the state and partnerships in driving economic development in New Mexico; and ask for support for the endowment bill and creation of department chairs during the 2013 legislative session.

Questions and comments from the committee included:

- specific legislative proposals;
- the need to match private donors for the faculty endowment fund;
- a comparison of New Mexico and North Carolina tax structures and the tax structures of their bordering states; and
- providing support for the development of entrepreneurial skills in students.

New Mexico Technology Council

Eric Renz-Whitmore from the New Mexico Technology Council presented to the

committee what the council believes New Mexico needs to do in order to become competitive in the technology industries. He defined the problem as being increased competition for scarce resources, and he outlined the major areas of importance in economic development as the costs of doing business, available work force, access to capital, a professional business community and the quality of life that New Mexico has to offer. He then highlighted two areas that need immediate attention: access to capital, which Mr. Renz-Whitmore stated should have a portfolio approach; and encouraging a more active tech business community in New Mexico through collaboration and partnership between different communities — political, scientific, business and educational.

Questions and comments from the committee included:

- the quality of services from the state, specifically the business assistance program;
- a possible partnership between the labs and entrepreneurs; and
- specific regulations that are inhibitory to economic development.

Power from the Sun

David Blivin, founder of the Cottonwood Technology Fund, addressed the committee and stated that New Mexico's greatest job creation opportunity lies in technology commercialization. He reviewed New Mexico's assets with regard to technology innovation and commercialization potential but stated that the majority of New Mexico's generated intellectual property is licensed out of state. He then outlined who is involved in tech commercialization and gave the committee a few examples of what other states are doing to encourage commercialization. According to Mr. Blivin, New Mexico needs to focus on creating a better environment for the maturation of ideas, gaining access to capital and producing a sound work force in order to encourage tech commercialization.

In order to support greater idea creation and development, Mr. Blivin suggested that New Mexico approve increased funding to the universities for endowed chairs to attract more research dollars; make tech maturation funding available; and approve loans from the Severance Tax Permanent Fund (STPF), to be converted to equity or repaid should the company choose to leave the state. Recommendations regarding an increase in resident capital and resources at the seed and Series A stages include an increase in Small Business Investment Corporation (SBIC) funding from 1% to 2% of STPF; placing all economically targeted investments (ETIs) under separate governance from the SIC and acknowledging the multiple returns of ETI funds beyond a strict financial return criteria; implementing an angel tax credit extension; and increasing the SIC allocation from 9% to 10% for the Fund of Funds program.

Questions and comments from the committee included:

- where ETIs would be placed if not with the SIC;
- how venture capital dollars flow in New Mexico;
- the approximate dollar amount it takes to successfully start a company;
- the relationship between public and private investors; and
- seed stage funding received from out-of-state investors.

Sustainable Albuquerque

Art Gardenschwartz from Sustainableabq.com introduced himself and made a presentation on sustainability specifically as it relates to solar energy. He stated that as New Mexico is able to attract companies and jobs, energy demand will increase and the need to create that energy in a sustainable manner will rise. Mr. Gardenschwartz then pointed out that Section 7-9-114 NMSA 1978 gives a tax exemption to solar installations that are over 1,000 kilowatts. He suggested that that exemption include solar installations that are smaller in size as well, in order to encourage sustainable energy growth in New Mexico.

Allan Oliver, CEO of the New Mexico Green Chamber of Commerce (NMGCC), gave an overview of the NMGCC. He stated that New Mexico's renewable energy potential is very high, ranking second in the nation in solar potential, seventh in geothermal power potential and eleventh in wind energy potential. He made five proposals to the committee, the first involving the creation of a model code for solar installations so that there is a uniform code from county to county. His second proposal was to decouple utility profit from energy sales. He also suggested investing in renewable energy storage, facilitating biofuel innovation and granting lower interest rates for energy-efficient and renewable-energy projects. Finally, Mr. Oliver advocated for a homebuyers tax credit, which is a jobs and revenue producing plan that marries the homebuyer refundable state tax credit with building energy reduction targets in order to dramatically increase private spending, stimulate new building construction and expand the local tax base. The tax credit will be available for three years for purchasing newly constructed energy-efficient homes and for purchasing and then renovating existing homes to high-efficiency standards.

Questions and comments from the committee included:

- whether local variations in solar ordinances are unique to New Mexico;
- ranking of the state in "green capital";
- further discussion of the \$15 million in tax credits for homebuyers in newly constructed energy-efficient homes and upgraded homes; and
- inhibitory regulations surrounding biofuel innovation.

Technology Enterprise Funding

David Buchholtz and Perry Bendicksen from Brownstein Hyatt Farber Schreck, LLP, made a presentation to the committee on technology enterprise funding. They reviewed who specifically invests in tech enterprises and at what stage. They also discussed where venture capital funds are typically found and where they usually are invested. They then gave an overview of New Mexico investors, including the SIC, which invests in venture capital funds that will remain in the state; the Public Employees Retirement Association, which has invested in five venture capital funds, none of which is located in New Mexico; the Educational Retirement Board, where funds must be \$50 million in size before investment and, as such, none is located in New Mexico; and the UNM Foundation, which no longer makes investments in venture capital. Mr. Bendicksen then reported on the track record of the state investment fund program, which outperformed the national program but has not been investing in local venture capital since 2009. Currently in New Mexico, there are only three venture capital funds that are making new investments, primarily only in later stage investment rounds. The outlook, if this

current trends continues, is that there will likely be no meaningful funding available for New Mexico technology companies in two to three years.

Questions and comments from the committee included:

- returns on investments that have been made;
- the SIC's position or intent with differential investment funds;
- the conservative philosophy behind the lack of new investments;
- further discussion of the proof of concept fund and the out-of-state angel investment tax credit; and
- action to homogenize county regulations across New Mexico.

Kirtland Jet Fuel Remediation Technologies and Timetables

Bruce Thomson, Ph.D., director of the Water Resources Program and professor of civil engineering at UNM, made a presentation to the committee on his own involvement and personal interest in the Kirtland Air Force Base (KAFB) fuel plume. He informed the committee of his observations regarding the fuel plume and what KAFB has done thus far to mitigate the problem. While he did state that KAFB was slow to act, he also outlined seven factors that reduced the immediacy of the threat. Finally, he made suggestions to the committee regarding regulatory, management and institutional gaps.

Colonel Jeffrey Lanning from KAFB stated that the U.S. Air Force has a sincere concern in ensuring that there is proper characterization and remediation of the fuel plume. He then introduced Tom Cooper from Shaw Environmental, the company performing the remediation. Mr. Cooper first described the regulatory framework to the committee and stated that the Department of Environment (NMED) issued a permit that outlines very specific steps that must be taken in the remediation process: characterization, evaluation and a final remedy. KAFB is currently in the evaluation stage, with some initial steps being taken toward remediation. Mr. Cooper then reviewed the various technologies in use at KAFB and stated that soil vapor extraction has been in use the longest and will most likely be a part of the final remedy.

Jim Davis, Ph.D., director, Resource Protection Division, NMED, gave an overview of the department's regulatory authority that is being imposed through permit with regard to the KAFB fuel spill. He then outlined the water quality regulations, requirements and standards. He reviewed the KAFB bulk fuels facility history and stated that fuel was identified in the subsurface in 1999. The current primary focus of the bulk fuels facility spill is the installation and operation of new soil vapor extraction units at two wells and the characterization of the northern extent and the northern core of the ethylene dibromide plume in the ground water. Finally, Dr. Davis addressed the current status of the spill and what can be expected looking ahead.

Rick Shean, Albuquerque-Bernalillo County Water Utility Authority, introduced himself to the committee and stated that the top priority for the authority is to maintain a safe and sustainable water supply. Mr. Shean informed the committee that the authority is acutely aware of the KAFB situation and has been monitoring drinking water production in the area of the spill.

The authority is currently working on emergency measures to keep drinking water safe and replace any water that has been contaminated. The authority requires that KAFB bring the aquifer back to the standards that were enforced before the spill.

Questions and comments from the committee included:

- the frequency of public hearings;
- the presence of illnesses related to the spill and the fact that none has been reported to date;
- the role of the federal Environmental Protection Agency in remediation;
- further discussion of the nine new wells that are being put into place in order to determine the northeast boundary of the fuel plume;
- expected final completion date of the remediation;
- various factors that could possibly affect sampling from the wells that have been put into place;
- the effect that the fuel spill has had on property values in the affected areas; and
- the fact that no contaminants have been detected in the drinking water to date.

The committee provided members of the public an opportunity to comment on the KAFB jet fuel spill.

Charlie Bennet introduced himself to the committee, informed the committee that he lives in the affected area and stated that there is need for an oversight body to be established by the state for the duration of the cleanup. Next, Dave McCoy addressed the committee and provided the members with a citizen action statement that outlined areas in which KAFB has been negligent and proposed action that he believes needs to be taken. Jim McKay came before the committee and stressed the need for quicker action by KAFB in the remediation of the spill. Finally, Dan McGregor from the Bernalillo County Water Resources Program addressed the committee and stated that there is no expected decline in property value and that there is funding available for emergency water treatment should the drinking water become contaminated.

Adjournment

There being no further business, the fourth meeting of the Science, Technology and Telecommunications Committee for the 2012 interim adjourned at 5:30 p.m.