# SCIENCE, TECHNOLOGY AND TELECOMMUNICATIONS COMMITTEE


# REPORT
# to the
# FIFTIETH LEGISLATURE

January 2011
Legislative Council Service

Science, Technology and Telecommunications Committee
2010 Annual Report
Summary

As were all interim committees, the Science, Technology and Telecommunications Committee (STTC) was requested by the Government Restructuring Task Force to review the functioning of state agencies on which the interim committee primarily focuses and recommend restructuring formulas to the task force. In its discussion of restructuring state government, the STTC spent most of its time considering the dilemma of the Public Regulation Commission (PRC). Because the PRC is a constitutional body, any proposed changes are subject to voter approval, so there was considerable discussion of the complexities involved in reorganizing the PRC. Several members of the committee began their comments by saying that the PRC should be eliminated. But they quickly added to that sentiment the recognition that any serious proposal for eliminating the PRC or changing its authority must recognize that the existing functions and mission of the PRC must be accommodated. For example, where should the Insurance Division of the PRC be relocated? The same could be asked about the Utility Division and the Fire Marshal Division.

Another significant question is the clarification of jurisdictional boundaries between the federal government and the state over the various utility authorities, particularly with regard to electric power generation, transmission and distribution. This industry, like the telecommunications industry, is undergoing rapid and significant structural change, and regulatory frameworks developed decades ago for previous technological paradigms no longer make sense in today's world with its rapidly evolving technologies.

The sense of the committee was that any changes to the PRC structure or its functions should be considered after a detailed review. The implications of haphazard legislation for narrow political purposes were discussed, and several comments were made about inconsistencies among the various laws enacted by previous legislatures, with some entities being covered by certain provisions in law and others exempted, or certain services covered while others are not.

The nature of how politics affects elected officials rather than appointed officials was also a focus of attention and raised the question, asked several times, about whether the legislature would err in creating an elected governing authority to replace appointed ones.

Should corporate filings be at the Office of the Secretary of State or at the PRC was another question discussed. The general consensus was that corporate filing is one function that should be housed at the PRC exclusively.

Transparency was discussed in the context of the PRC, and suggestions were made that the PRC should webcast all its hearings and that all documents filed for cases before the commission should be available to the public online. Comments were made to the effect that the PRC is not responding to technological changes, either in its own business management or in its regulation of industry. Whether the PRC should regulate companies or services was asked, and

there was a recognition that the legislature is to blame to some extent for the way it wrote the laws governing the PRC.

The quasi-judicial nature of the PRC was also discussed; it was considered to be a problem and should be rethought. In some ways, the PRC has been a moderating influence, and any reform should avoid unforeseen consequences that previous reform efforts clearly did not avoid.

The theme of the discussion was the need for:

1. careful evaluation of the structure and function of the PRC;
2. consistency in policies;
3. a replacement structure for the PRC should be in place before repeal or change;
4. a comprehensive or holistic rather than an incremental approach to policy-setting, whether the PRC or some other entity is doing it; and
5. credentialing of PRC commissioners or board members.

In a discussion of the Energy, Minerals and Natural Resources Department, the issue of oversight and legislative review of agency rules was the theme, as it was for the Radioactive and Hazardous Materials Committee.

Finally, E-911 was discussed at length with no real consensus. Some felt that the transfer of E-911 to the Department of Public Safety made sense; others wanted it to stay at the Local Government Division of the Department of Finance and Administration.

The committee met six times; each meeting was at the State Capitol. Testimony was heard on:

1. the state's information technology (IT) systems and the status of the Department of Information Technology;
2. interoperability among the state's data systems, the status of IT security measures and disaster recovery and business continuity concerns;
3. energy efficiency;
4. the status of renewable energy projects, including solar, wind farm and algae biofuel;
5. broadband status and telemedicine;
6. smart grid development;
7. the status of the New Mexico Renewable Energy Transmission Authority;
8. the status of Encanto Gateways (the supercomputer);
9. a Spaceport America update;
10. "horizon" technology research at Sandia National Laboratories and Los Alamos National Laboratory; and
11. venture capital perspectives on New Mexico's emerging technology enterprises.

# Work Plan

**2010 APPROVED**
**WORK PLAN AND MEETING SCHEDULE**
**for the**
**SCIENCE, TECHNOLOGY AND TELECOMMUNICATIONS COMMITTEE**

**Members**

Sen. Stephen H. Fischmann, Chair
Rep. Roberto "Bobby" J. Gonzales, Vice Chair
Rep. Janice E. Arnold-Jones
Sen. Vernon D. Asbill
Sen. Kent L. Cravens
Sen. Dede Feldman
Sen. Phil A. Griego
Sen. Linda M. Lopez
Rep. Jane E. Powdrell-Culbert
Rep. Debbie A. Rodella
Rep. Nick L. Salazar
Rep. Luciano "Lucky" Varela
Rep. Richard D. Vigil

**Advisory Members**

Sen. Mark Boitano
Sen. Carlos R. Cisneros
Rep. Karen E. Giannini
Rep. Ben Lujan
Sen. Richard C. Martinez
Rep. Kathy A. McCoy
Sen. William H. Payne
Rep. Danice Picraux
Sen. John M. Sapien
Rep. Don L. Tripp
Rep. Jeannette O. Wallace

**Work Plan**

During the 2010 interim, the committee intends to review:

1. recommendations to reorganize, streamline and improve the functions of the Department of Information Technology (DoIT), the Public Regulation Commission (utilities and telecommunications) and the Energy, Minerals and Natural Resources Department;

2. unnecessary duplication of IT systems, especially GIS components of different agencies that rely on the same database;

3. interoperability among the state's data systems, the status of IT security measures and disaster recovery and business continuity concerns;

4. energy efficiency technologies;

5. renewable energy projects' status, including dairy biomass, solar, wind farm, algae biofuel and geothermal projects;

6. broadband status and competitiveness for medical purposes, education, research and economic development and the respective roles of Qwest and the DoIT in deploying broadband capacity;

7. smart grid development;

8. status of the New Mexico Renewable Energy Transmission Authority;

9. the location and operations of Encanto Gateways (the supercomputer) and contracts;

10. status of the National Solar Observatory role of New Mexico State University;

11. Spaceport Authority's payload plans, aerospace research, development, deployment and enterprises and potential recruitment of payload launches for low-orbit solar electric power generation;

12. "horizon" technology research at Sandia National Laboratories and Los Alamos National Laboratory that may have economic development potential in New Mexico, including research in turbines and dairy technologies; and

13. venture capital perspectives on New Mexico's emerging technology enterprises.

**Science, Technology and Telecommunications Committee**
**2010 Approved Meeting Schedule**

| Date | Location |
|---|---|
| June 7 | Santa Fe |
| July 19-20 | Santa Fe |
| August 18 | Santa Fe |
| September 27-28 | Santa Fe |
| October 27 | Santa Fe |
| November 29-30 | Santa Fe |

# Agendas

**TENTATIVE AGENDA**
**for the**
**FIRST MEETING**
**of the**
**SCIENCE, TECHNOLOGY AND TELECOMMUNICATIONS COMMITTEE**
**June 7, 2010**
**Room 322, State Capitol**

**Monday, June 7**

8:30 a.m. **Call to Order**
—Senator Stephen H. Fischmann, Chair

**Government Restructuring Review**
—Paula Tackett, Director, Legislative Council Service (LCS)
—Raúl E. Burciaga, Director-Designate, LCS

9:00 a.m. **National Energy Policies**
—Daniel I. Fine, Development Associate, New Mexico Institute of Mining and Technology (NMIMT)

10:00 a.m. **National Transmission Capacity Issues**
—Carl Huslig, Director, ITC Grid Development

11:00 a.m. **New Mexico Regional Energy Transmission Authority (NMRETA) Status Report**
—Jeremy Turner, Director, NMRETA

12:00 noon **Lunch**

1:00 p.m. **Smart Grid Progress**
—Van Romero, Vice President, NMIMT

2:00 p.m. **Distributed Generation in New Mexico**
—Brian Cassutt, New Mexico Program Manager, Renewable Funding

3:00 p.m. **New Mexico Energy Conservation Building Codes**
—Maire Claire Voorhees, Regulation and Licensing Department

4:00 p.m. **2010 Interim Work Plan and Meeting Schedule**

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

**Revised: July 15, 2010**

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

**July 19-20, 2010**
**Room 322, State Capitol**

**Monday, July 19**

9:00 a.m. **Call to Order**
—Senator Stephen H. Fischmann, Chair

**Department of Information Technology: Mission, Resources and Structure**
—Marlin Mackey, Secretary, Department of Information Technology

10:30 a.m. **Energy, Minerals and Natural Resources Department: Mission, Resources and Structure**
—Jim Noel, Secretary-Designate, Energy, Minerals and Natural Resources Department

12:00 noon **Lunch**

1:00 p.m. **Public Regulation Commission: Mission, Resources and Structure**
—TBA, Commissioner[s] (Invited)
—Roy Stephenson, Director, Utility Division, Public Regulation Commission

2:30 p.m. **Energy Efficiency**
—Ron Darnell, Vice President of Regulatory Affairs, Public Service Company of New Mexico (PNM)
—Tammy Fiebelkorn, Southwest Energy Efficiency Project (SEEP)
—John Curl, Coalition for Clean Affordable Energy (CCAE)

4:00 p.m. **Decoupling Rate-Setting from Generation**
—Jason Marks, Public Regulation Commissioner
—Ron Darnell, Vice President of Regulatory Affairs, PNM
—David Stephens, Chief Executive Officer, El Paso Electric (Invited)

5:30 p.m. **Recess**

**Tuesday, July 20**

9:00 a.m. **State Renewable Portfolio Standards**
—Glen Anderson, National Conference of State Legislatures

10:00 a.m. **Technology Enterprise Development in New Mexico**
—David Blivin, Cottonwood Technology Fund

11:00 a.m. **Kit Carson Electric Cooperative Solar Energy Status**
—Luis Reyes, Chief Executive Officer, Kit Carson Electric Cooperative

12:00 noon **Lunch**

1:00 p.m. **Supercomputing (Encanto) Facility Status**
—Tom Bowles, Governor's Science Advisor (Invited)

2:00 p.m. **Inverted Block Rate Structure**
—Tammy Fiebelkorn, SEEP
—John Curl, CCAE
—Ron Darnell, Vice President of Regulatory Affairs, PNM

3:00 p.m. **Adjourn**

**Revised: August 13, 2010**

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

**August 18, 2010**
**Room 322, State Capitol**

**Wednesday, August 18**

9:00 a.m. **Call to Order**
—Senator Stephen H. Fischmann, Chair

**Public Regulation Commission (PRC) Topics**
—PRC Commissioners
—Michael Rivera, Chief of Staff, PRC
— Roy Stephenson, Director, Utility Division, PRC

10:30 a.m. **Telemedicine**
—Dr. Sanjeev Arora, Professor of Medicine, Department of Internal Medicine, University of New Mexico (UNM) Health Sciences Center, Director, Project ECHO
—Marc Malkolff, UNM Hospital Stroke Program

12:00 noon **Lunch**

1:00 p.m. **Electric Grid Renewable Energy Integration**
—Abraham Ellis, Renewable Energy Grid Integration Program, Sandia National Laboratories

2:30 p.m. **Los Alamos National Laboratory — State of the Lab: Overview, Research and Development and Renewable Energy Highlights**
—Duncan McBranch, Deputy Principal Associate Director, Science, Technology and Engineering, Los Alamos National Laboratory

4:00 p.m. **Fast Forward New Mexico**
—Susan Oberlander, State Librarian
—George Jaramillo, Director, Taos Library
—Lynette Schurdevin, Library Administrator, Thomas Branigan Memorial Library, Las Cruces

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

**Revised: September 23, 2010**

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

**September 27-28, 2010**
**Room 307, State Capitol**

**Monday, September 27**

10:00 a.m. **Call to Order**
—Senator Stephen H. Fischmann, Chair

**Smart Grid Challenges**
—Clay Doyle, El Paso Electric
—Jon Hawkins, Manager, Advanced Energy Technology and Strategy, Public Service Company of New Mexico

11:00 a.m. **Electric Transmission Efficiency**
—Dr. Satishkuma J. Ranade, Director, Electric Utility Management Program, New Mexico State University

12:00 noon **Lunch**

1:30 p.m. **Boulder, Colorado's, Smart Grid Experiment**
—Mary Fisher, Vice President of Strategy Technology, Xcel Energy

2:30 p.m. **Galvin Electricity Initiative**
—Kurt Yeager, Executive Director, Galvin Electricity Initiative
—John J. "Jack" McGowan, Chief Executive Officer, Energy Control, Inc.

4:00 p.m. **Qwest Status and Merger with Century Link**
—Leo Baca, Qwest
—Michael Horcasitas, Qwest
—Edie Ortega, Century Link

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

**Tuesday, September 28**

9:00 a.m. **Research Applications Center Status and Angel Investment Tax Credit**
—Fred Mondragon, Secretary of Economic Development
—Allan Oliver, Deputy Secretary, Economic Development Department
—Thomas Bowles, Governor's Science Advisor

10:00 a.m. **Industrial Environmentalism**
—Brandon Barbello, Chief Executive Officer, Virtu Clean Technology

11:00 a.m. **Department of Information Technology Data Systems Responsibility**
—Marlin Mackey, Secretary of Information Technology

12:00 noon **Lunch**

1:00 p.m. **Barriers to Renewable Energy Development**
—Tom Wray, Project Manager, SunZia

2:00 p.m. **New Mexico Renewable Energy Transmission Authority — Update**
—Jeremy Turner, Director

3:00 p.m. **Adjourn**

**Revised: October 26, 2010**

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

**October 27, 2010**
**Room 322, State Capitol**

**Wednesday, October 27**

9:00 a.m. **Call to Order**
—Senator Stephen H. Fischmann, Chair

**Broadening E-911 Surcharge**
—Shirley Whatley-Valdez, Chair, New Mexico Association of Counties (NMAC) E-911 Directors Affiliate
—Ken Martinez, Vice Chair, NMAC E-911 Directors Affiliate

**Right-of-Way Fees**
—Harold Garcia, NMAC, Public Works Directors Affiliate
—Tito Chavez, NMAC lobbyist

10:30 a.m. **University of New Mexico (UNM) Research, Research Centers and Renewable Energy**
—Julia E. Fulghum, Vice President for Research and Economic Development, UNM
—Arup Maji, Interim Dean, School of Engineering, UNM
—Plamen Atanasov, Director, Center for Emerging Energy Technologies, UNM

12:00 noon **Lunch**

1:00 p.m. **Renewable Energy, Efficiency and Rate Making; What Is Working**
—Ken Costello, National Regulatory Research Institute

2:30 p.m. **Clean Technology Commercialization**
—Brendan Miller, Economic Development Department
—Ellen Veseth, Economic Development Department

3:30 p.m. **Los Alamos National Laboratory (LANL) Energy Transmission Study Report**
—Jeremy Turner, Director, New Mexico Renewable Energy Transmission Authority
—Loren Toole, LANL

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

**Revised: November 19, 2010**

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

**November 29-30, 2010**
**Room 311, State Capitol**
**Santa Fe**

**Monday, November 29**

9:00 a.m. **Call to Order**
—Senator Stephen H. Fischmann, Chair

**Sandia National Laboratories; Laboratory-Directed Research and Development**
—James Woodard, Director, Science, Technology and Engineering Innovations and Partnerships

10:30 a.m. **Clean Line Energy**
—Keith Sparks, Development Director, Centennial West Clean Line

11:30 a.m. **Lunch**

1:00 p.m. **Government Transparency and Efficiency and Cost Savings**
—Senator John M. Sapien

1:30 p.m. **Department of Information Technology (DOIT) Policy Considerations**
—Marlin Mackey, Secretary, DOIT

3:00 p.m. **Economic Impacts of Algae Biofuels on New Mexico**
—C. Meghan Starbuck, Assistant Professor, College of Business, New Mexico State University

4:30 p.m. **Telecommunications Competition and Facility Relocation Cost Recovery**
—Leo Baca, Qwest
—Loretta Armenta, Qwest

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

**Tuesday, November 30**

9:00 a.m. **Government Restructuring; Committee Discussion**

10:00 a.m. **Spaceport America Status Report**
—Rick Homans, Spaceport America

11:00 a.m. **Space Alliance Technology Outreach Program**
—Naomi Engelman, Project Engineer, Space Alliance Technology Outreach Program

12:00 noon **Adjourn**

# Minutes

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

**June 7, 2010**
**Room 322, State Capitol**

The first meeting of the Science, Technology and Telecommunications Committee was called to order by Senator Stephen H. Fischmann, chair, at 8:45 a.m. on Wednesday, June 7, 2010, in Room 322, State Capitol.

**Present**
Sen. Stephen H. Fischmann, Chair
Rep. Roberto "Bobby" J. Gonzales, Vice Chair
Rep. Janice E. Arnold-Jones
Sen. Linda M. Lopez
Rep. Jane E. Powdrell-Culbert
Rep. Debbie A. Rodella
Rep. Luciano "Lucky" Varela

**Absent**
Sen. Vernon D. Asbill
Sen. Kent L. Cravens
Sen. Dede Feldman
Sen. Phil A. Griego
Rep. Nick L. Salazar
Rep. Richard D. Vigil

**Advisory Members**
Rep. Karen E. Giannini
Rep. Kathy A. McCoy
Rep. Don L. Tripp
Rep. Jeannette O. Wallace

Sen. Mark Boitano
Sen. Carlos R. Cisneros
Rep. Ben Lujan
Sen. Richard C. Martinez
Sen. William H. Payne
Rep. Danice Picraux
Sen. John M. Sapien

**Staff**
Gordon Meeks, Senior Bill Drafter, Legislative Council Service (LCS)
Ralph Vincent, LCS
Leslie Porter, Research Assistant, LCS

**Guests**
A copy of the guest list is in the meeting file.

**<u>Wednesday, June 7</u>**

Senator Fischmann welcomed the attendees and introduced Paula Tackett, director, LCS. Ms. Tackett explained the regulations put in place by the New Mexico Legislative Council, which include fewer meeting days and no traveling, unless approved by the legislative council.

She mentioned she has been gratified to serve the legislature, and that Raúl E. Burciaga has been appointed as director upon her retirement.

**Government Restructuring Review**

Ms. Tackett explained House Bill 237, sponsored by Representative Varela, which created the Government Restructuring Task Force. The task force is requesting help from each interim committee and would like initial budget proposals by September.

**National Energy Policies**

Daniel I. Fine, Ph.D., development associate, New Mexico Institute of Mining and Technology (NMIMT), discussed how national energy policy has undergone several changes. From the 1940s through 1972, no national energy policy was needed because the United States was self-reliant due to an abundance of domestic oil. As a result, the U.S. dominated energy production through 1973. After 1974, due to U.S. reliance on foreign oil, the Organization of the Petroleum Exporting Countries (OPEC) changed the equation and caused a price escalation. This introduced the need for U.S. energy independence, therefore requiring a national energy policy establishing the Department of Energy (DOE). The 1976 policy was to reduce the reliance on foreign oil; however, public land access limitations, biological diversity protection and clean air regulations have created contradictions.

Dr. Fine continued by noting the ebb and flow of national energy policy as being price respondent. In the early 1980s, the price of oil sharply declined as the production capacity exceeded demand and dropped to an all-time low of $10.00 per barrel, down from $41.00 per barrel. This caused energy independence in the national energy policy to disappear. He noted that this period ended sharply around 2000, followed by another escalation in price.

Another radical shift in energy policy was the incorporation of national security due to the events of September 11, 2001, followed by the subsequent war in Iraq. The emphasis was now on eradicating imports from the Middle East and utilizing non-petroleum sources of energy. Climate policy was also folded into energy policy, and, in 2008, the role of financial services was as well.

Dr. Fine highlighted the clear fragmentation and contradiction of U.S. national energy policy, with contradictory goals and objectives such as secure and affordable energy; ecological and environmental imperatives of low- or non-carbon emissions; job creation; the revival of energy independence; and a substitution for oil. He mentioned that, currently, there is a lack of agreement between President Obama and Congress about where the policy should be today.

Dr. Fine began discussing the carbon cap-and-trade alternative to a carbon tax as the government's new mechanism to achieve a low-carbon economy, create jobs and advance energy technology international leadership. It also anticipates market investment to lower emissions. He explained the federal American Power Act, which created allowances for emissions costing the emissions source $12.00 per ton of carbon dioxide once the free allowances are exhausted. He opined that power companies have an incentive to retrofit existing coal-fired electricity generation facilities.

Concerning New Mexico, he mentioned discussion of a carbon cap-and-trade system and the problems arising from it. First, industrial investment risk management models seek less-regulated environments, therefore hindering investment in the state. Second, Dr. Fine feels that the federal cap-and-trade law will preempt New Mexico from developing state variations due to the federal requirement for deficit reduction funding from the sale of allowances.

Dr. Fine continued discussion of the American Power Act and how its modifications from the U.S. House of Representatives, its support from the oil and gas industries and the BP oil spill created another dimension. He mentioned how the BP oil spill is an energy shock that can alter policy overnight. He added that the American Power Act included leases to the oil and gas industries for offshore exploration and production on the Atlantic coast and additional access to the Gulf of Mexico. He mentioned that the provision has been preempted by a deep and ultra-deep moratorium of at least six months.

The cost to energy independence from the BP oil spill is substantial, because drilling in the Gulf of Mexico was supposed to create a diaspora of energy resources apart from OPEC, opined Dr. Fine. In addition, deep and ultra-deep oil extraction functions as the replacement of reserves for onshore domestic operations in the U.S.

Dr. Fine stated that currently, the Gulf of Mexico rigs are leaving for recertification in the North Sea and in Brazil. The rigs have three-year rental contracts for $1 million per day. Therefore, the contracting oil companies cannot allow them to idle or stack. He wondered if future provisions for drilling in the Gulf of Mexico will prove to be a disincentive for the rigs to return. He also wondered if the regulatory future is going to be too costly and what the price of crude oil should be to support those costs. He informed the committee that almost 30% of current crude oil for domestic sources originates in the Gulf of Mexico, with shallow production facing sharp declines. He further questioned what the impact will be on retail prices of gasoline at the pump.

Dr. Fine concluded by noting President Obama's announced compromise, recognizing that oil is needed for middle term, moving to clean and renewable energy in the long term. In sum, Dr. Fine opined that the U.S. national energy policy is fragmented and full of contradictory objectives; however, it is not the end of the use of oil as a traditional fuel. He observed that the Obama administration has a strong commitment to research and that the choice will be made to have one national laboratory to develop carbon capture strategies.

He then asked what New Mexico can do. Because of solar access, New Mexico can develop research programs to attract investment such as start-up and undercapitalized companies, which will be good for jobs, business and the economy.

The committee's discussion addressed:

- nuclear energy and reprocessing technology, as used by France;
- a potential nuclear energy corridor in eastern New Mexico;
- a New Mexico-formulated independent state cap-and-trade program;

- an appropriate carbon dioxide emissions tax level;
- availability of fuels and natural gas as transportation fuel;
- whether shale gas is an area that should be pursued on an accelerated basis;
- water needed to obtain shale gas;
- monetary and environmental costs and the international policies of each source, including nuclear, solar, wind and fossil fuels;
- conservation and efficiency costs; and
- dairies and their effect on ground water.

**National Transmission Capacity Issues**

Carl Huslig, director of ITC Grid Development, gave an overview of ITC, stating that it is the first and only fully independent transmission company and the ninth largest transmission company in the U.S. Since 2003, when he began ITC Holdings Group, ITC has invested more than $1.5 billion in transmission system upgrades to improve reliability, reduce system congestion and facilitate the nondiscriminatory interconnection of new generating assets. He explained ITC's last project of a 180-mile transmission line linking western Kansas to the industrial areas in eastern Kansas, adding that the interconnection allows energy to move across the state.

The importance of ITC's independence was discussed next, using a comparison of a single airline being responsible for all actions of the air traffic control tower at an airport and asking whose flights would be the first to land. He then applied this to the energy industry. Mr. Huslig discussed the historical transmission and distribution investment from 1979 to 2007, illustrating that in the U.S., transmission, load and demand have doubled in the last 20 years, whereas transmission investment has been stagnant. He mentioned that, due to incentives in 2003 from the Federal Energy Regulation Commission (FERC), demand for transmission has exponentially increased. He furthered the discussion on independence, emphasizing the focus on ownership, operation, maintenance and construction of transmission facilities as a single line of business; the lack of internal competition for capital; and the aim to bring significant benefits to customers.

Mr. Huslig talked of the current transmission environment, stating that by 2030, he expects an increase in demand by 24%. He declared that the U.S. has aging infrastructure and has had no significant transmission infrastructure built in the past 30 years. He noted that the August 14, 2003 blackout was caused by inefficiencies and the lack of investment across the grid. He added that because a robust grid does not exist, interconnection problems do exist, such as a wind developer not being able to make progress due to being told it will take five to 10 years before the developer can connect to the grid.

Mr. Huslig focused on how energy gets to a home. He stated that oil is transported from the Middle East by way of fuel-powered barges; it is used to move coal railcars from the coal fields to a city, with coal loss due to coal dust. Then, coal is shoveled into coal-generating plants with 30% efficiency, and electricity is generated and transported across transmission and distributions lines, where another 9.5% is lost due to congestion in the system.

Mr. Huslig pointed out that New Mexico is rich in solar and wind energy; however, wind is highly variable because it does not blow with consistency. He cited the wind potential in eastern New Mexico, stating that all generation resources need access to a robust transmission grid. However, he stated that a transmission grid cannot be built just for renewable sources of energy. ITC is estimating that over the next 20 years, $230 billion will be needed to bring the transmission grid up to date.

Mr. Huslig declared that energy policy changes need to be made. He explained that prior to 1996, transmission was built solely for internal purposes. In 1996, FERC Landmark Order 888 was passed in Congress as the National Energy Act, which opened up the transmission grid for competition and required transmission owners to provide nondiscriminatory access to the grid, thus creating a new regional paradigm. FERC Order 2000 in 1999 encouraged utilities to participate in regional transmission organizations. Still, Mr. Huslig emphasized, no truly regional transmission has been built.

He presented the current transmission policy and the barriers it has created, including those to existing transmission owners as well as to potential owners. Mr. Huslig explained the problems with the current policy, including the uncertainty of cost allocation and recovery; the unpredictable and lengthy state and local siting for projects with regional benefits; the disproportionally high costs to generators for network upgrade projects; and the uncertainty on regulated rates of return.

Mr. Huslig discussed the factors impeding regional transmission. He stated that a lack of collective industry vision is present, as well as the parochialism caused by vertically integrated utilities and state regulation. He noted the influence of market participants and the fallacy of the generation versus transmission debate, and he included the existence of local opposition and the not-in-my-back-yard challenges. He declared that all of the aforementioned issues are interrelated and they stem from the lack of a national energy policy that addresses regional planning, cost allocation and siting.

He elaborated on the challenges of regional transmission organizations. First, they are voluntary in nature, and its members and stakeholders influence regional planning. Competing interests occur when planning regional transmission and when trying to run an energy market. Also, there is disagreement as to who should pay for regional projects. On this note, Mr. Huslig's presentation declared that significant transmission policy changes are necessary. He stated that a general recognition of the constraints placed on regional transmission development and access to renewable energy sources from the existing structure is needed. He added that if the recognition took place, major changes could occur in two to three years. He also noted that policy changes could come from federal legislation and from reinterpretations by FERC of existing statutes as well as from court decisions.

Mr. Huslig explained upgrading the grid via modernized rules. He stated that a new national energy policy vision is needed to guide decisions on planning future energy delivery systems. Within that, he said, independent regional planning is also needed. He discussed briefly the cost allocation of the project, declaring that everyone would be beneficiaries of a

robust grid and that everyone would pay for it, comparing it to the highway project overseen by President Dwight D. Eisenhower.

He illustrated the components of electricity in proportions by service category, with transmission allocating 8% of the pie; distribution 26% of the pie; and generation 66% of the pie. Slide 28 reminded the committee that in order for regional transmission to become a reality, there must be an energy policy vision. He closed by noting that a white paper on the modernization of New Mexico's transmission grid was distributed.

Committee members discussed:

- cost estimates for new transmission lines and the revenue to pay for them;
- paying for transmission that does not serve its residents;
- potential to build a lower capacity, finite grid in New Mexico to avoid becoming a "flyover" state;
- local and build-out to the national;
- sovereignty issues when crossing Pueblo land;
- transmission costs being about 8% of the average monthly bill;
- determination of right of way and eminent domain powers; and
- the regulatory process.

**New Mexico Renewable Energy Transmission Authority (RETA) Status Report**

Jeremy Turner, director, RETA, began his presentation by discussing the background and structure of the RETA. He stated that the RETA was statutorily created in 2007 to address transmission issues in New Mexico and is charged with the planning and financing of transmission lines. Mr. Turner agrees with Mr. Huslig that, given its renewable energy sources, New Mexico is well-positioned. He illustrated the RETA's project selection policy, which provides guidance as to what support the RETA is willing to provide and what it means once it is provided. The policy defines the levels of support as letters of support, memoranda of understanding and financial assistance. Concerning eminent domain, the RETA's policy is similar to cooperatives.

Mr. Turner discussed Senate Memorial 44, which defined the RETA's responsibilities. First, the RETA must develop a map and supporting documents to identify the existing generation and transmission lines and renewable energy resource zones to support development, which the RETA has not done. Mr. Turner stated that staff recently presented the zones to the board, and they will be presented to the public. Second, the RETA is to coordinate with other agencies to prioritize regions with low or minimal land development conflicts, which it is doing with military installations to minimally impact potential missions and to minimize the impact on state or federally managed land, wildlife and archaeological areas. Third, the RETA must identify and prioritize the best options for potential transmission corridors. The first hearing on the corridors will be held soon. Mr. Turner noted that the hearing, as well as an updated report every six to 12 months, are part of the next steps the RETA is taking. The RETA will also present to counties with finalized corridors and reduce the time needed to site lines from years to months.

Mr. Turner explained the two-pronged Los Alamos National Laboratory study. He discussed looped versus radial lines, stating that looped lines ensure more reliability. In regard to the economic analysis of varying levels of investment in renewables, it will impact the gross receipts tax and the property tax, it will create jobs and there will be cost recovery options.

He depicted the Public Service Company of New Mexico's (PNM's) collector system, illustrating southwestern transmission groups, which Mr. Turner thinks makes the most sense for the best wind and solar power to enter the market. Mr. Turner mentioned that the map is a significant area of focus for the RETA, and the RETA will try to pursue the studies. Mr. Turner added that the RETA has requested $750,000 in federally earmarked money for the project.

Laura Sanchez, projects committee chair for the RETA, explained the RETA's first bond issue. She stated that the total bond issues of $65 million should be closing by the end of July. Mr. Turner added that the documents are finalized and discussions with potential investors have taken place. He mentioned that the RETA is compensated for its participation. Originally, it was compensated $75,000 annually, but that amount does not fund the RETA for four years; therefore, a one-time payment of $550,000 will be paid at the time of closing, and, if the bonds close, the RETA will be in operation through June 2012 with no general fund appropriations. He emphasized that the RETA does not want to take away from the state but wants to add value to the state by becoming self-sufficient.

The committee discussed:

- the $65 million cost in upgrades and who owns the assets that are upgraded;
- the RETA as a conduit not obligated to pay bonds;
- the relative estimate of cost savings to companies through the RETA's involvement;
- operational costs if the RETA is unable to sell its bonds;
- why a private entity would want to subsidize a public entity;
- eminent domain;
- the RETA's role in routing transmission lines and what value the RETA brings to that process;
- the RETA's role in attending regional meetings to observe how transmission affects those levels and coordination and communication with the military, landholders, stakeholders and developers;
- corridor planning and how the state and the Bureau of Land Management have been involved;
- transmission industry response to the process;
- involvement of the SunZia project;
- the RETA's role over state lines;
- the purpose of the Los Alamos study;
- where the High Plain Express hookup goes; and
- the cost-effectiveness of interconnecting the three grids.

**Smart Grid Progress**

Van Romero, vice president, NMIMT, said that energy efficiency can eliminate more than 20% of the world energy demand by 2020. He said that New Mexico is third in the nation for solar power potential, twelfth in the nation for wind power potential and ranks high in geothermal energy potential. He explained the Green Grid Initiative, telling the committee that various entities, such as Mesa del Sol, the City of Taos and Roosevelt County, will all be installing smart meters.

He described the smart grid research at Playas, New Mexico, down in the bootheel. NMIMT purchased the town to allow controllable research to be conducted on the grid, such as unstable conditions and intentional crashing of the grid so that researchers may understand how it fails, thereby validating how efficient various systems are. Mr. Romero added that the homes are cookie-cutter homes, so they can be compared head-to-head.

Mr. Romero closed by stating that the Playas project has been running since 2006 and has been planned as a renewable national test bed working with the Green Grid Initiative. He mentioned that New Mexico has all the assets necessary for a smart grid, including natural resources; existing federal funding and national laboratories; and an industrial base and a university base. He declared that New Mexico is positioned to be a leader in smart grid technology and that the DOE funding requires matching funds, which can be a challenge when seeking large grants.

The committee discussed:

- the amount of the grant and the matching requirement ($50 million to $100 million for the research grant and a 20% to 50% match);
- geothermal power potential;
- smart meters' relation to utilities and Mesa del Sol's implementation of this technology;
- retrofitting homes for smart meter compliance;
- the configuration of smart meters to show electricity usage in increments of less than a month;
- configuration for net metering and if the net metering is sold back to PNM;
- how quantities of natural gas are measured for use in hot water heaters; and
- "water" treated as a mineral under property law.

**Distributed Generation in New Mexico**

Brian Cassutt, president, Renewable Energy Industries Association (REIA), discussed distributed generation in New Mexico and property assessed clean energy (PACE) programs. He described the REIA as a group of 40 renewable energy companies throughout New Mexico. He declared that the industry is awaiting policies that will encourage long-term growth. He said that the REIA has been heavily involved in PNM's 2010 Revised Renewable Portfolio Plan, which is currently being heard by the Public Regulation Commission (PRC). He discussed four lessons that the REIA has learned from the process: that the reward structure for utilities needs to be modified; that the goals of the statutorily established renewable portfolio standard should be re-

examined; that distribution generation should be clearly emphasized in legislation; and that calculations made as to the effects of renewable energy should be made on a long-term basis.

Mr. Cassutt opined that utilities, consumer advocates, environmental groups and industry have legitimate interests in creating goals for New Mexico's energy future. He feels that the aforementioned groups should be brought to the table to collaborate in producing reasonable but strong policies to guide New Mexico to energy independence.

He discussed the progress of the PACE programs in New Mexico, explaining that the programs allow property owners to obtain the capital to build a renewable energy system and repay the financing through a line item on their property taxes. He noted that Santa Fe is implementing the first program. New Mexico's legislation limits financing opportunities for renewable energy systems, and he has been working with governmental and environmental groups to expand the legislation.

The committee discussed:

- primary distributed generation fuels in New Mexico (solar);
- the rate of return on the investment, depending on the incentives available — usually 11 to 15 years;
- tax credits that may have stimulated that market;
- the potential for utilities to invest in efficiency measures that would earn them the same return as investing in a power resource;
- thermal storage as used in El Paso, Texas;
- energy efficiency based on kilowatt hours saved;
- the need for utility infrastructure that is managing energy at a baseline; and
- that with the current distributed generation standard, if a home has a solar panel and utility power is lost, the solar system has to disconnect because of the safety hazard.

**2010 Interim Work Plan and Meeting Schedule**

The committee reviewed a draft proposed work plan, which was submitted to the New Mexico Legislative Council and subsequently approved.

**New Mexico Energy Conservation Building Codes**

Maire Claire Voorhees, Regulation and Licensing Department (RLD), and Lisa Martinez, director, Construction Industries Division (CID), RLD, said that New Mexico has a unified building code developed by tailoring international building codes for New Mexico's climate. Ms. Voorhees explained increases in efficiencies since 2006 and that the goal of new code revisions is 20% more efficiency. She emphasized that a new code is not adopted if it does not vet a benefit to the consumer. She discussed residential building code benefits that, if implemented, would result in a benefit over a 30-year mortgage, due to savings on utilities. She added that a commercial code would result in a 20% gain by reducing the impact on the environment and reducing the reliance on oil.

Ms. Martinez mentioned that the CID received a federal stimulus grant for a statewide training and educational program to educate inspectors, contractors, architects, engineers, members of the public and financial institutions on the benefits of the new codes. She stated the formal code adoption in New Mexico is scheduled for July 2011.

The committee discussed:

- increasing mortgage costs; there should be a monthly payment rise and an equivalent utility payment drop;
- a request for a list of code changes and display costs and the savings for validation;
- new code applicability to existing buildings;
- that the New Mexico Homebuilders Association requested an opportunity to report back to the committee on this topic, pointing out that this is a significant change that affects the method of construction and profits and the concern over being forced to renovate an entire apartment building when only 50% of it needs to be redone;
- the relation to regulations for affordable housing;
- poor inspections on duct work; and
- assumptions of a three-year fixed 6% mortgage and energy costs based on current energy costs and other variables not taken into account.

The committee adjourned at 3:50 p.m.

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

**July 19-20, 2010**
**Room 322, State Capitol**

The second meeting of the Science, Technology and Telecommunications Committee was called to order by Senator Stephen H. Fischmann, chair, at 9:05 a.m. on Monday, July 19, 2010, in Room 322, State Capitol.

| **Present** | **Absent** |
|---|---|
| Sen. Stephen H. Fischmann, Chair | Sen. Vernon D. Asbill |
| Rep. Roberto "Bobby" J. Gonzales, Vice Chair | Sen. Kent L. Cravens |
| Rep. Janice E. Arnold-Jones | |
| Sen. Dede Feldman | |
| Sen. Phil A. Griego | |
| Sen. Linda M. Lopez (July 20) | |
| Rep. Jane E. Powdrell-Culbert | |
| Rep. Debbie A. Rodella | |
| Rep. Nick L. Salazar | |
| Rep. Luciano "Lucky" Varela | |
| Rep. Richard D. Vigil (July 20) | |

| **Advisory Members** | |
|---|---|
| Sen. Carlos R. Cisneros | Sen. Mark Boitano |
| Rep. Karen E. Giannini | Sen. William H. Payne |
| Rep. Ben Lujan | Sen. John M. Sapien |
| Sen. Richard C. Martinez | |
| Rep. Kathy A. McCoy | |
| Rep. Danice Picraux | |
| Rep. Don L. Tripp | |
| Rep. Jeannette O. Wallace | |

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

**Guest Legislator**
Rep. Nathan P. Cote

**Staff**
Gordon Meeks, Legislative Council Service (LCS)
Ralph Vincent, LCS
Jeret Fleetwood, LCS
Leslie Porter, LCS

**Guests**

A copy of the guest list is in the original meeting file.

**Monday, July 19**

Senator Fischmann began the meeting by having members of the committee introduce themselves.

**Department of Information Technology: Mission, Resources and Structure**

Marlin Mackey, secretary of information technology, provided the committee with an overview of the mission, resources and structure of the Department of Information Technology (DOIT). He began by noting that the department's mission is to provide customers with cost-effective and efficient enterprise products, services and solutions in a secure environment, pointing out that doing so will enable state government to better serve the public. Secretary Mackey went on to explain that the DOIT is the enterprise information technology service provider for almost all of state government, which includes:

- desktop service, including over 20,000 email accounts;
- hosting and storage services, such as mainframes and data storage and backup;
- voice communication services, such as desktop telephony on over 18,000 phones, conference calling and wireless voice and data; and
- data network and internet services.

Secretary Mackey also reviewed the structure of the department, noting that it is currently at about 16 percent vacancy, which has spread the agency fairly thin. He also discussed the agency's budget, pointing out how it has been reduced over the past few fiscal years, and the statewide financial impact of the agency's services. Secretary Mackey indicated that the DOIT has received some grant funding, with several other proposals already submitted.

Secretary Mackey went on to discuss the department's ongoing projects and security issues. He explained that while IT security is always being improved, entities from around the world are constantly trying to breach it. He noted that one attempted security breach involved the Chinese government and the Federal Bureau of Investigation became involved in the case.

Bob Mayer, deputy secretary of enterprise services, DOIT, discussed the department's value enhancement matrix with the committee. He explained that several factors have been identified as having the potential to be more valuable to the department if they are improved. For example, Mr. Mayer noted that improving the delivery of online services or promoting increased interoperability could help the department make much better use of its resources.

Questions and comments included the following:

- health-care-related grants for which the department is applying;
- federal funding available for various health-care-related entities for improved IT;
- improvements to Motor Vehicle Division of the Taxation and Revenue Department systems should be ready in 18 to 24 months;
- interaction between the DOIT and public education is somewhat limited by the autonomy provided to local school districts to develop IT resources on their own;
- expected life cycle of off-the-shelf systems versus homegrown ones;

- software exists to scan networks for several types of hardware but not everything;
- the DOIT has identified aging gear that may need replacement;
- the high number of billing strategies employed by the DOIT and models employed by other states that might work better;
- plans to expand the number of microwave towers so that law enforcement and emergency service agencies have statewide coverage without any dead spots;
- continuing improvements are being made to the secretary of state's information systems;
- reorganization and restructuring issues, including fiscal year 2010 and fiscal year 2011 budgets, the number of executive agencies not served by the DOIT and funding availability for vacant positions; and
- prioritization by the DOIT of those things that cannot be sacrificed by additional budget cuts.

**Energy, Minerals and Natural Resources Department: Mission, Resources and Structure**

Jim Noel, secretary-designate of the Energy, Minerals and Natural Resources Department (EMNRD), provided the committee with an overview of the mission, resources and structure of the department. He began by providing the committee with an overview of various department divisions, the number of employees in each division and the vacancy rate for each division. Secretary-Designate Noel then discussed each division in more detail, noting the amount of general fund money received for each division, as well as other funding sources. He also discussed some of the special funds used by the department, such as the State Parks Fund, and several of the federal grants to the department.

Jim Perry of both the EMNRD and the Department of Environment discussed some of the reorganization and restructuring issues raised by the committee. He explained that there is still some federal stimulus money that the EMNRD is using to meet federal requirements. Mr. Perry also noted that while the EMNRD does have a number of special funds, most of them are tied to specific uses. He also noted that while most of the EMNRD's vacancies are on the books as funded, there simply is not enough money to hire anyone. Mr. Perry also pointed out that while the number of full-time-equivalents in the EMNRD is currently the same as in 2002, there are significantly more vacancies.

Questions and comments included the following:

- contemplation by the Energy Conservation and Management Division of the EMNRD of nuclear power as a means of better managing energy demands;
- the department is currently unable to perform some of its required duties, making further budget reductions particularly difficult;
- development by the department of a list of those duties that must be fulfilled, those that it is currently not fulfilling and the consequences of not fulfilling those duties;
- lack of notification to people who made campsite reservations at state parks, only to find that the park had been closed due to lack of resources;
- federal funding for forest restoration and watershed thinning;
- bond issues regarding the Youth Conservation Corps; and
- the Youth Conservation Corps project prioritization list.

**Public Regulation Commission: Mission, Resources and Structure**

Public Regulation Commissioners Jerome Block, Theresa Becenti-Aguilar, David King and Jason Marks introduced themselves to the committee and provided it with an overview of the Public Regulation Commission's (PRC's) duties, divisions and bureaus. They explained that the PRC regulates public utility companies, telecommunications companies, motor carriers, insurance companies and insurance agents operating in New Mexico. The commissioners went on to discuss the PRC's operating budget, recent accomplishments and the number of cases they reviewed over the past year. They also described the mission and recent accomplishments of the various divisions of the commission.

Roy Stephenson, director of the PRC's Utility Division, discussed utility rates in more depth. He noted that utility rates, and utility companies themselves, have seen unprecedented change over the past 10 years. For example, he pointed out that in 1999, very few people had cellular phones, but now their use has grown to replace landlines in many households. Mr. Stephenson also indicated that there have been wild price fluctuations in electricity rates recently, noting that renewable energy has played a large role in those fluctuations. He also noted that renewable energy is currently rather expensive to produce, but that the cost of not developing it will be much larger.

Commissioner Marks discussed the duties of the PRC in more depth. He explained that insurance accounts for a significant portion of the commission's workload, but that statutory limitations on the commission's authority make it difficult to function properly. For example, Commissioner Marks explained that the commission is unable to hear appeals to decisions made by the superintendent of insurance. He suggested that the legislature provide the commission with the authority or consider creating a separate agency to regulate insurance.

Commissioner Marks went on to note that some of the commission's other responsibilities, such as transportation, corporations and the state fire marshal, that take time away from the commission's other pursuits, particularly utilities.

Questions and comments included the following:

- potential areas of regulation that the legislature could reassign to give the PRC more time to focus on utilities;
- problems with rules concerning ex parte communications by the commission;
- development of new software to help the PRC regulate corporations;
- other government entities responsible for the regulation of utilities;
- the desire for transparency versus the sheer complexity of utility rate case hearings;
- the possibility of the PRC publishing executive summaries of rate hearings;
- PRC regulation of the propane industry;
- New Mexico's role in western energy transmission issues;
- regulation of telecommunications companies;
- that federal preemption may not allow New Mexico to collect taxes from some telecommunications companies; and
- competition between wireless phone companies and traditional phone companies.

**Energy Efficiency**

Tammy Fiebelkorn of the Southwest Energy Efficiency Project provided the committee with an overview of energy efficiency programs. She explained that energy efficiency helps reduce greenhouse gas emissions without costing utilities more in infrastructure costs. She explained that there are two main sources of energy efficiency in investor-owned utilities: demand side management programs and ratemaking. For example, Ms. Fiebelkorn noted that utility companies are often reluctant to encourage energy efficiency among their customers because customers using energy efficiently tend to use less, which eats into the utility company's profits. However, she explained that using ratemaking to move away from traditional pricing models can help companies continue to profit while still encouraging customers to use their energy efficiently. Ms. Fiebelkorn went on to discuss energy efficiency programs in other types of utilities, such as rural electric cooperatives, noting that programs among cooperatives vary widely. She also discussed federal American Reinvestment and Recovery Act of 2009 funding that has been made available to state and local governments to encourage energy efficiency programs. Finally, Ms. Fiebelkorn discussed energy efficiency in new and existing buildings.

Ron Darnell, vice president of regulatory affairs for the Public Service Company of New Mexico (PNM), discussed energy efficiency from a utility's standpoint. He began by noting that PNM does offer several residential and commercial energy efficiency programs. He said that energy efficiency is the least cost resource for the utility, but he went on to explain that traditional utility regulation provides strong disincentives for utilities to promote energy efficiency. He pointed out that the Efficient Use of Energy Act attempted to solve the problem, and that PNM customers have benefited, but the company's revenues have continued to fall. Mr. Darnell emphasized that energy efficiency and traditional regulation models do not add up to a sustainable business model. He also explained that because much of the "low-hanging fruit", such as converting to compact fluorescent light bulbs, in energy efficiency has been harvested, the cost of acquiring energy efficiency resources will increase.

John Curl of the Coalition for Clean Affordable Energy echoed the comments of both Ms. Fiebelkorn and Mr. Darnell.

Questions and comments included the following:

- how New Mexico's PRC rate structure compares to other states;
- the negative impact of energy efficiency programs on profit margins;
- whether New Mexico's business climate makes increasing energy efficiency more difficult than it needs to be;
- whether inverted block rate structures make more sense to both consumers and utilities;
- new power plants usually come with utility rate increases to help offset the cost;
- difficulty in fairly dividing the benefits of energy efficiency between consumers and utilities; and
- how realistic it is to consider that traditional rate structures will be changed.

**Decoupling Ratesetting from Generation**

Commissioner Marks provided the committee with a presentation on rate decoupling from generation.

Mr. Darnell noted that rate regulation creates disincentives to utility investments in energy efficiency and suggested that decoupling ratesetting from generation is a solution. He explained that decoupling works to encourage energy efficiency by eliminating the link between kilowatt per hour sales and revenues. Further, Mr. Darnell indicated that decoupling would allow a utility to adjust its rates to recover revenues approved by a regulatory body, in this case the PRC, regardless of the utility company's sales level. To better illustrate, Mr. Darnell provided the committee with a rate design example that showed how allowing straight fixed/variable pricing (a decoupling model) would likely cost customers less than variable pricing (the current model) while still ensuring that the utility company would cover its costs and make a reasonable profit. However, he cautioned that consumers who continue to conserve energy do cause problems for the rate case model presented.

Mr. Darnell went on to note that although decoupling does remove the disincentive for utilities to pursue energy efficiency, avoids more frequent rate cases and provides justification for inverted block rates, customers who reduce their consumption see decoupling as a penalty. He went on to note that 11 states, plus the District of Columbia, have decoupled electricity service.

Questions and comments included the following:

- the average electricity bill would likely contain a rider under decoupling, making it look different from today's bill;
- the tendency of utilities to pass their costs on to customers through surcharges;
- the potential for decoupling to improve the electric utility industry, even though it is not the perfect solution; and
- legislation passed in 2008 that laid the foundation for decoupling.

The committee recessed at 5:00 p.m.

**Tuesday, July 20**

**State Renewable Portfolio Standards**

Glen Anderson with the National Conference of State Legislatures (NCSL) described to the committee how renewable portfolio standards (RPS) require electricity suppliers to provide a minimum percentage of retail electricity from renewable energy sources. If utilities cannot meet the standard, they are required to acquire renewable energy credits or alternative compliance payments. No two RPS programs are alike. He said 29 states have RPS standards. Some have set-asides for solar or other special renewables. Sixty-four bills dealing with RPS are pending in 25 states this year. Most states are reaching 90 percent to 100 percent of their targets. Wind dominates the renewable portfolios so far. Sixteen states and Washington, D.C., have solar distributed generation provisions in their RPS policies. Few states have required alternative compliance payments. He told the committee that the solar set-asides have water problems in some western states. He said that the slow progress in accomplishing California's RPS goals is due to "NIMBYism" (the not-in-my-backyard kind of opposition to any kind of development that changes the landscape or the community host). There is some evidence that renewable energy options are driving down the cost of conventional energy (provided by natural gas) in Texas. Wind provided 42 percent of new capacity nationwide in 2008. New Jersey has a solar set-aside, which is the longest. Much of it is rooftop instead of utility scale. There are lawsuits

that challenge RPS provisions that require in-state renewable preference. He then summarized property assessed clean energy (PACE) laws, which 22 states have enacted. PACE laws are special assessment districts for solar installation investments.

The committee asked questions and discussed the following:

- renewable credit exchange (western regional electric generation information system) mechanism;
- cost recovery mechanisms;
- alternative compliance fees in other states;
- New Mexico utilities purchasing renewables from out of state;
- status of the solar facility in Santa Teresa;
- Fannie Mae and Freddie Mac opposition to tax assessment financing due to primary liens on homes;
- the concept looks good in a glossy brochure, but the details bog the programs down;
- some states are trying to set up a central finance system to supersede the county level bonding methods;
- technical assistance outreach by the state to communities;
- advances in self-sustaining technology;
- New Mexico should be a leader in research;
- the potential role of the New Mexico Finance Authority;
- need for state legislators to push their local officials to implement it;
- California Attorney General Jerry Brown has filed suit against Fannie Mae and Freddie Mac; and
- the number of communities without electricity.

During this discussion, the committee adopted a motion by Senator Feldman and seconded by Representative Vigil (opposed by Representatives Arnold-Jones and Powdrell-Culbert) to send a letter requesting New Mexico Attorney General Gary King to join with California in its lawsuit; to send a letter to the New Mexico congressional delegation asking for Congress to overrule action by Fannie Mae and Freddie Mac; and to send a letter to the NCSL Agriculture and Energy Committee.

**Technology Enterprise Development in New Mexico**

David Blivin, managing partner, Cottonwood Technology Fund, told the committee that there were a record number of start-up businesses last year, which is not unusual during recessions, when people who lose their jobs start their own businesses. He said that during recessions, older companies experience job losses, but start-ups create more new jobs than old companies lose. New Mexico needs diversification, he said, because it is too reliant on oil and gas for revenue and business. Now is the time for New Mexico to support alternative energy start-ups. He said that the state's advantages favor enterprises associated with film, supercomputer technology, the Spaceport and the green grid. He described the activities and priorities of the New Mexico Technology Commercialization Council (solar and algae energy, smart grid, oil and gas, computing, nuclear power, wind energy, microsystems and nanosystems, biomedical, biofuels and sensors). The council is advocating for a $100 million investment over 10 years spent holistically for work force training, tax credits, research and investment in start-ups. He said that New Mexico needs to get serious. Industry recruitment does matter relative to

creating a supportive ecosystem, but there is a more crucial need for long-term commitment to support the growth of local enterprises.

The committee asked questions and discussed the following:

- the history of similar proposals;
- development and commercialization is the stage where New Mexico has failed;
- intellectual property issues;
- at some point, companies that the state has invested in move out of state;
- "management willing to be here";
- the need for seed stage capital;
- transportation infrastructure; and
- the state has been burned by a number of investments and policies and these bad experiences have established a "bad taste" in policymakers' mouths.

**Kit Carson Electric Cooperative Solar Energy Status**

Luis Reyes, chief executive officer of Kit Carson Electric Cooperative, gave the committee a quick history of the cooperative and its current efforts to diversify its energy portfolio, with an emphasis on solar development. He said the cooperative is headquartered in Taos and was incorporated in 1944. The cooperative operates electric, telecommunications and propane subsidiaries and has a third-party call center. It has a customer base of 28,185 electric, 3,533 propane and 1,621 telecommunications customers, for a total of 33,339 customers. The cooperative serves Taos, Rio Arriba, Colfax, Santa Fe, Union, San Juan, McKinley, Sierra, Hidalgo and Cibola counties in its various services and had revenues in 2009 totaling $39,702,356. He told the committee that the cooperative's goals for solar energy are to:

- enhance and attain RPS standards and targets;
- develop local distribution generation sources;
- encourage and support economic development;
- reduce the carbon footprint in the event of climate change legislation;
- create a local green economy;
- research and provide funding resource information for ways to finance solar applications for all those who wish to use solar in their homes and businesses;
- develop a solar energy work force;
- explore technology to advance solar availability, including rooftop, solar array, distributed generation, interconnection and net metering applications;
- enhance electric system deficiencies or weaknesses such as enhanced voltage profile, reduced line loss, increased capacity support and stabilized power supply; and
- defer capital projects.

He told the committee that Kit Carson Electric Cooperative was allocated $5 million in 1996 through clean renewable energy bonds, which were used to install solar arrays at the University of New Mexico (UNM)-Taos campus, over the cooperative's parking lot, at Northern New Mexico College and at KTAO radio station. He described forthcoming solar community array projects in which members may lease portions of the array within their economic means and receive a proportional credit on their bill. These projects will be built at Taos Charter School and Holy Cross Hospital. He also summarized the cooperative's net-metering program.

The committee asked questions and discussed the following:

- uniqueness of Kit Carson's program (Colorado and Arizona examples);
- partnering with members;
- consequences of failures;
- the cooperative's other businesses (telecommunications and propane);
- PRC regulatory authority over Kit Carson diverse businesses;
- internet provider business;
- interoperability with 911 and other public safety communications;
- acreage requirements for power at the hospital;
- Kit Carson's rates;
- integration with existing distribution lines;
- compliments to Mr. Reyes and the board;
- potential visit to Kit Carson next year for a committee meeting;
- potential for getting into the natural gas business;
- cooperation with Los Alamos National Laboratory and Northern New Mexico College;
- the Legislative Finance Committee will meet in Taos in August at UNM-Taos;
- the scale of projects; and
- the tri-state 30-megawatt solar facility in Cimarron and 51-megawatt wind project.

**Supercomputing (Encanto) Facility Status**

Lenny Martinez, chief operating officer for Encanto Supercomputer, and Gina Tanner, Economic Development Department, described the New Mexico Computing Applications Center. They said that the digital industry lends itself to rural areas and to communities of creative people. Examples they gave of enterprises using the supercomputer are: Cerelink, which signed a contract with DreamWorks; DreamWorks' multi-year contract; and the DigitalMedia Project. They said that the supercomputer's cloud computing capacity is a benefit that has attracted clients. Intel is buying a large package of time, they said. Cerelink is looking at biomedical and energy applications. They said that additional capital is needed for next year for additional computing ability to support the digital media industry. Sony is talking about potential satellite operations based in the state. Some customers want to do this work remotely, using gateways. They did not start out thinking about gateways in this way, but this market has developed rapidly. The energy market includes green grid and smart grid proposals, which are in the pipeline now. The Japanese are looking to make an investment. The National Center for Genomic Research is also interested. They said the supercomputer has been in the news lately due to its model of the Deepwater Horizon well oil dispersal.

The gateways/education systems has far exceeded expectations. There are 44 institutions of higher education in New Mexico, and the 20 gateway locations enable systemic education throughout the state. The digital media industry jumped on board first to use the gateway system for virtual auditions. Monterey would like its own gateway, now, as a result of a visit to New Mexico to see the supercomuter. This is a tremendous opportunity for rural development, they told the committee.

The loss of operational funding in fiscal year 2011 forced the transition to self-sufficiency sooner than expected. As a result of aggressive marketing, Intel is moving its energy research center to New Mexico and film companies are interested in virtual auditions. This is a critical year for this transition to self-sufficiency.

The committee asked questions and discussed the following:

- use of gateways in the State Capitol;
- use of gateways today;
- free access to the schools;
- operational costs are $2 million per year;
- the relationship between the supercomputer and the gateways (?);
- Intel's (host) restrictions on equipment usage;
- between $300,000 and $350,000 in actual revenue for 2009;
- impatience with progress;
- the contract with "NEDO" (Japanese smart grid consortium);
- desktop supercomputers competing with Encanto's 14,000 CPUs;
- Northern New Mexico College gateway site;
- telemedicine applications;
- public school system participation with and access to the supercomputer;
- use of the supercomputer for researching tax code costs and benefits;
- the DOIT owns the supercomputer;
- asset depreciation and cash flow against the Computer Applications Center's nonprofit contract operator;
- rate structure and destination of revenue for services;
- the long-term plan to replace the supercomputer;
- the speed of the supercomputer and the number of upgrades since its acquisition;
- how much of capacity of the computer is being used;
- universities' use of the supercomputer;
- the number of state agencies to which the DOIT provides free computers;
- Intel is buying 10 percent of the capacity of the machine;
- term of the contract between the state and the Computer Applications Center;
- the value of in-kind services (Intel's $20 million investment to upgrade the floor) and Sandia system technical support;
- memorandum of understanding with the College of Santa Fe; and
- broadband infrastructure.

**Inverted Block Rate Structure**

Mr. Darnell defined inverted block rates as a cost structure for energy in which each additional block or unit of energy above a given level is charged at a higher rate than preceding blocks. He described PNM's proposed inverted block rates and said that the intent is to promote conservation but not economic efficiency. This proposal will reduce rates in the lower usage blocks. He said that this proposal recognizes that the future cost of generation is more expensive than today's cost of generation. Inverted block rates work with decoupling, allowing for greater cost recovery in the higher blocks, which is a greater reward for responding to the price signal. Decoupling surcharges can be applied only to the higher blocks while decoupling refunds are applied only to the lower blocks. He said that without decoupling, the last block cannot be priced at marginal cost, which would mitigate the conservation price signal. He said that it does promote conservation but it does not support economic efficiency.

Ms. Fiebelkorn and Mr. Curl said that they support inverted or inclining block rates.

The committee asked questions and discussed the following:

- the complexity of rate cases and PRC actions;
- quality of the PRC web site;
- why decoupling and inverted block rates should work in tandem;
- a common sense explanation of these terms so that customers can understand it; and
- more frequent rate case intervals.

The minutes of the June meeting were approved.

The committee adjourned at 3:30 p.m.

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

**August 18, 2010**
**Room 322, State Capitol**

The third meeting of the Science, Technology and Telecommunications Committee was called to order by Senator Stephen H. Fischmann, chair, on Wednesday, August 18, 2010, at 9:07 a.m. in Room 322 at the State Capitol.

**Present**
Sen. Stephen H. Fischmann, Chair
Rep. Janice E. Arnold-Jones
Rep. Jane E. Powdrell-Culbert
Rep. Debbie A. Rodella
Rep. Nick L. Salazar
Rep. Luciano "Lucky" Varela

**Absent**
Rep. Roberto "Bobby" J. Gonzales, Vice Chair
Sen. Vernon D. Asbill
Sen. Kent L. Cravens
Sen. Dede Feldman
Sen. Phil A. Griego
Sen. Linda M. Lopez
Rep. Richard D. Vigil

**Advisory Members**
Sen. Carlos R. Cisneros
Rep. Karen E. Giannini
Sen. Richard C. Martinez
Rep. Kathy A. McCoy
Sen. William H. Payne
Rep. Danice Picraux
Rep. Jeannette O. Wallace

Sen. Mark Boitano
Rep. Ben Lujan
Sen. John M. Sapien
Rep. Don L. Tripp

**Staff**
Gordon Meeks, Legislative Council Service (LCS)
Ralph Vincent, LCS
Jeret Fleetwood, LCS

**Guests**
The guest list is in the meeting file.

**Handouts**
All handouts and written testimony are in the meeting file.

**<u>Wednesday, August 18</u>**

Committee members introduced themselves.

**Public Regulation Commission (PRC) Topics**

Michael Rivera, PRC chief of staff, introduced PRC Commissioners Jason Marks, Theresa Becenti-Aguilar, David King, Sandy Jones and Jerome Block and Roy Stephenson, Utilities Division director. Mr. Stephenson told the committee that the Public Utility Act is not as simple as it once was because there are now different approaches to ratemaking and cost adjustments that did not exist when the act was enacted. He said that new issues related to electric power fuels must be contemplated in ratesetting and approval that were not part of the process before. He referred to examples, such as solar energy intermittancy, that may cause voltage irregularities. Regarding solar and wind energy alternatives, a million-dollar word is storage. The question to utility companies and the PRC then becomes, "How do we price storage and who supplies it?". He said storage may be addressed with flywheels, thermal storage, batteries or gravity-feed hydroelectric. Mr. Stephenson said that utilities themselves, which the PRC regulates, may not be the providers of these kinds of renewable energy services; rather, a third party may now be providing electricity and storage. He said that many economic issues arise with these changes. The retail end is the same: the utility still delivers electric power and collects revenue to pay for its costs. He also stressed that electricity demand varies and reserve capacity is required in order to provide services.

The committee discussion began by focusing on what happens if there is a default by a third-party provider. The utility is required by law and rule to deliver electric power in exchange for having a monopoly in its service area. The utility has to protect itself in its contract with third-party providers, and the PRC will review the prudency of the utility in entering into its contracts and may limit a utility in its discretion.

Committee members asked why a "map" of areas where no electricity is available was not provided, as was previously requested. The Torreon Chapter of the Navajo Nation has no electricity service, and other areas of the Navajo Nation were cited as examples. The PRC staff responded by clarifying that on the Navajo Nation, the Navajo utility is the provider and the PRC does not have jurisdiction on sovereign tribal land. The PRC has a consumer protection service to help consumers address problems with service, but the PRC has no means of polling the public to identify service gaps. The committee then discussed legislative appropriations to extend electric lines to unserved, remote areas. A meeting was planned with rural electric cooperatives to identify areas without service and to discuss problems of providing service.

A question of safety was then raised about electric service delivery, which is under several federal agencies. The PRC has never, to Mr. Stephenson's memory, been asked to address safety issues because there have been none. He said there is 99.9% reliability of electric services in New Mexico. The electric cooperatives have other problems because of lines through the mountains, and there is a body of regulation that addresses reliability and safety. There is a $100,000 per day fine for interruption of services.

Committee members raised the issue of utilities being nationalized through transmission changes. It was stated that New Mexico must be involved to protect its ratepayers from paying the costs of delivery of service to California or other customers in other states.

Other questions included if utilities are required to have a certain amount of reserve power for servicing growth in demand as it occurs. It was answered that large users may have a "capacity component" to their utility bills.

The relationship between the PRC and the New Mexico Renewable Energy Transmission Authority (RETA) was described. RETA bonds are exempt from rules of the PRC. PRC jurisdictional questions were expanded to explore regulatory authority over the Tri-State Generation and Transmission Association (the interstate cooperative generator and transmission company that is exempt by statute from PRC regulation). Tri-State has increased rates to members, and unfair treatment of New Mexico cooperatives has been alleged by one New Mexico cooperative. A comment was made about changing the state law governing Tri-State. The law currently requires an agreement among three member cooperatives to challenge Tri-State's governance or rates. A comment was made that Tri-State is improving and becoming more responsive to New Mexico's concerns. New laws on cooperatives might provide for more transparency of electric cooperatives, but the state probably cannot regulate their rates because they are member-owned and federally franchised.

The federal government has preempted regulation of all wholesale power transactions. The first obligation of the PRC is to make sure that New Mexico residents are connected. The statutes limit the PRC's authority over location of and siting of transmission lines that are not connected to utility systems that serve New Mexico, and some transmission line developers may come to the legislature asking for eminent domain in return for PRC authority to regulate location and siting of transmission lines.

Committee members discussed environmental regulators and interaction with PRC jurisdiction and limits on cost recovery of environmental compliance investments through rate adjustments. For example, the PRC has no control over coal-fired power plants in the Four Corners area because these plants are on Navajo Nation land. The Department of Environment and the Environmental Improvement Board, not the PRC, have environmental regulatory authority over emissions of power plants off Navajo Nation land. A request was made to have the Department of Environment present the status of the haze rules required of Public Service of New Mexico coal-fired plants.

Mr. Stephenson said that a certificate of convenience is required for approval of utility construction and rate cases to recover costs. The challenge for the PRC is to find a cost-effective way to deliver the power without reducing reliability.

The committee explored whether there is a conflict of interest as a result of a utility's cost of adjudicating an issue in front of the PRC being included in the rates paid by consumers. Carol Riser, attorney for the PRC, said that Colorado law gives that state's utility regulator staff the authority to audit the utility's books. A question of the adequacy of PRC staff and their statutory authority to audit a utility's books was raised, which led to a discussion of the dynamics of rate cases reviewed by the PRC. The most contentious issue in rate cases is the allowable return on equity (profit).

**Telemedicine**

Dr. Sanjeev Arora, professor of medicine, Department of Internal Medicine, University of New Mexico (UNM) Health Sciences Center, and director, Project ECHO, explained that the mission of Project ECHO is to develop the capacity to safely and effectively treat chronic, common and complex diseases in rural and underserved areas and to monitor outcomes. He said that the program is supported by the Department of Health, the Agency for Health Research and Quality, the New Mexico Legislature and the Robert Wood Johnson Foundation. He illustrated the project's services by elaborating on hepatitis C care services. It is estimated that

there are 170 million carriers of hepatitis C worldwide. In New Mexico, Dr. Arora testified, it is estimated that more than 28,000 are affected and less than 5% have been treated. Without treatment, 8,000 patients will develop cirrhosis between 2010 and 2015, with several thousand deaths. He said that there are 2,300 prisoners diagnosed in the corrections system with the illness and none have been treated. New Mexico has the highest rate of chronic liver disease and cirrhosis deaths in the nation. He said the good news is that this illness is highly treatable and curable in 45% to 81% of the cases. Dr. Arora painted a picture of New Mexico's health care dilemma: 121,356 square miles with a population of 1.83 million; 32 of 33 New Mexico counties medically underserved; 22% of the population with no health insurance; and a poverty rate of 18%, compared to the national rate of 12%. He said that the program has conducted 400 hepatitis C telehealth clinics, and more than 4,000 patients have entered the hepatitis C disease management program. Five thousand one hundred continuing medical education hours have been issued to Project ECHO clinicians for hepatitis C, and 237 hours of hepatitis C training have been conducted at rural sites. Other complex illnesses may be treated successfully through programs like Project ECHO. For example, community-based care for cardiac risk factor reduction is more effective than enhanced primary care, he said. Project ECHO supports community health workers, who can be effective because they are based in the community; understand the local culture; appreciate the economic limitations of the patient; know the community; often know the family; can engage other social resources for the patient; and spend more time with the patient. He gave a strong endorsement for community health workers.

Members of the committee asked about involvement of veterans and the Department of Veterans Affairs system in Project ECHO services and participation of New Mexico in a federal demonstration program to be expanded nationwide. The Project ECHO budget of $1.5 million was reduced to $250,000 in FY 2011, and Dr. Arora was asked how this affected the program.

He was also asked about the preventive medicine impact of Project ECHO; how much more there is to do (298 programs); compensation for participating doctors in negotiations with Molina Healthcare; cost of continuing medical education credits through Project ECHO; diseases that may fit in the program, which include AIDS/HIV; a list of communities that are served by Project ECHO; staff size for Project ECHO programs (36); and tracking general community health programs.

Marc Malkoff, M.D., professor of neurosurgery and neurology, and medical director, Stroke Program, UNM, told the committee the only way to provide adequate stroke response is locally. Stroke victims are not getting transported to stroke care centers. Statistics indicate that tissue plasminogen activator treatments for stroke are efficacious for telemedicine. He said New Mexico has a shortage of neurologists and acute-care beds, so UNM is trying to set up a telemedicine response. The ability to have two-way communications with the patient is essential. It would be easy to convert every hospital in the state into a stroke care center through telemedicine, he testified. Equipment is inexpensive, and the physician cost would be $1.2 million. Medicare is an obstacle, as is credentialing and resistance to change. Public education is the most important element to improve the recognition of stroke symptoms.

The committee asked Dr. Malkoff about Christus St. Vincent Regional Medical Center's trauma system capacity, prevention by lifestyle education in public schools and the role of heart associations in preventive health care. The committee was interested in the relationship of Project ECHO with school nurses. A memorial was discussed to request Medicare administrators to cooperate with Project ECHO. Telemedicine is cost-effective because it works

with existing health care programs. Dr. Malkoff said that stroke prevention is identical to heart disease prevention.

The committee asked what legislators can do to help progress in stroke care, which Dr. Malkoff answered by saying that legislators can mandate stroke care in hospitals. This was followed by detailed questions and discussion about the efficacy of surgery.

**Electric Grid Renewable Energy Integration**

Abraham Ellis, Renewable Energy Grid Integration Program, Sandia National Laboratories, showed the committee a chart indicating that New Mexico is ranked twentieth in the nation among states with wind energy potential. Texas is number one, with 22 times the amount of wind capacity as New Mexico. He said New Mexico ranks higher in its solar potential but is still not among the top 10 states in new grid-tied solar electric installations in 2009. Based on 2009 data, the United States relies on fossil fuel for 69% of its electric energy, with only 4% of electricity generated from renewable sources. Nearly 45% of electricity comes from coal-fired power plants, 24% from natural gas, 20% from nuclear energy and 7% from hydroelectric facilities. He said there are technical challenges to the integration of renewable energy generators, but the renewable energy generators are only limited by costs and risks. Because voltage must be maintained within set service limits, high levels of solar photovoltaic deployment could cause excessive voltage increases that would have to be moderated to maintain system integrity. The principal dilemma over integration of renewable energy generation is its variability, which is why additional generation from renewable sources must be balanced by conventional generation sources in order to balance the voltage over the distribution and transmission systems. Alternatives include upgrading the conductor circuits, disconnecting or reducing solar output when voltage is too high or using energy storage systems. Mr. Ellis said that photovoltaic variability and uncertainty can make it more difficult and costly to operate those generators and a large amount of solar generation could trip the system due to elevated voltage levels. Also, the displacement of conventional generation might cause system instability. The same issues can be said to apply to wind because of its variability, but wind generation might offset solar generation to some extent because wind may be higher when solar is less. Geographic diversity, weather forecasting, increased flexibility of conventional generation and load response mechanisms (smart grid) could all help the integration of renewable energy systems. He concluded by reiterating that there are no absolute limits but that integration will require technical improvements to energy systems and will add costs.

The committee members asked about simultaneous wind and solar generation and how extra voltage is controlled when it is not being distributed to customers when demand is low, such as at night.

Some discussion focused on how other countries with less solar potential, such as Germany, manage to integrate solar generators into their grids and what types of storage systems are used in the solar demonstration program in Ota, Japan. The explanation of storage technologies brought up the subject of load management and demand response capabilities, which require a "smarter" grid. Mr. Ellis answered that the missing links are smart grid communications capabilities of individual residential appliances. He said that work is continuing at Sandia on such innovations as solar thermal generation, sterling engines, blade design for wind generators, energy storage, smart grid technologies, cybersecurity and a combination of solar energy and air to create liquid energy. Advances in storage technologies for small-scale energy consumers would be helpful.

A question was asked about geographical distribution for compressed air storage in underground pore space, which brought up references to last year's pore space bill.

**Los Alamos National Laboratory (LANL) — State of the Lab: Overview, Research and Development and Renewable Energy Highlights**

Duncan McBranch, deputy principal associate director, Science, Technology and Engineering, LANL, summarized LANL's budget: $2.17 billion, of which the majority (53%) is weapons-related. He told the committee that LANL is the oldest, most complex and second-largest Department of Energy weapons site and is working hard to transform into a more efficient site. LANL includes 40 square miles, 1,280 buildings with nine million gross square feet and 11 nuclear facilities. He said that 40% of LANL is more than 40 years old and that 30% of the staff work in poor or failing space. There is $450 million of deferred maintenance backlog. There are 268 miles of roads on LANL property, 100 of which are paved. He said there has been one million square feet of footprint reduction of post-World War II production facilities. LANL is a collection of unique facilities that addresses critical stockpile stewardship challenges; includes supercomputing capabilities; allows researchers to study weapons performance; provides nanotechnology research programs; and draws international scientists to study materials. LANL's core function is to sustain the safety, security and effectiveness of the nation's nuclear deterrent through stockpile stewardship. LANL designs warheads, which constitute more than 60% of the nation's deterrent and the majority of the on-alert deterrent. This stockpile is managed through surveillance and life extension. Confidence without nuclear testing is based on a more fundamental science and engineering understanding.

Mr. McBranch said that LANL is involved in research and development of energy in three areas: energy demand, nuclear energy and concepts and materials for clean energy. Subsets of these areas include programs in:

- efficient extraction of energy content from fuel;
- nonproliferation;
- energy storage, generation and transmission;
- predictive models for climate;
- infrastructure impact safeguards;
- effective waste management;
- revolutionary alternatives to petroleum;
- clean fossil energy analysis;
- prediction of abrupt change at multiple scales (regional to global); and
- global security and policy implications.

LANL is operated by Los Alamos National Security, LLC, for the Department of Energy and the National Nuclear Security Administration.

Mr. McBranch summarized one of the specific projects, the Japanese partnership with Los Alamos County in photovoltaic integration and interconnection testing. The goal is to demonstrate that utility-scale photovoltaic systems can be integrated in a cost-effective manner into small-sized to mid-sized communities with minimal impact on the transmission grid by controlling different mixes of existing and new balancing resources to mitigate fluctuating photovoltaic generation. This project will involve the installation of 150 smart meters on homes and at LANL. It will provide the ability to forecast changes in solar irradiance. Energy storage

with a combination of batteries and pumped water will be tested, as will electrical load shedding from LANL facilities, which will provide renewable energy to LANL.

Committee members were interested in why France is ahead of the U.S. in nuclear fuel processing and management. The answer was that France has a different political culture and there are concerns about the economic viability of New Mexico uranium deposits. On that subject, the Hyperion Design at LANL for a modular reactor was discussed.

The committee was also interested in the funding source for renewable energy research at LANL and the ownership and disposition of patents and intellectual property of LANL partnerships.

Several questions were asked regarding the demographics of post-doctoral students at LANL who are New Mexico natives.

The minutes of the July meeting were approved with changes.

**Fast Forward New Mexico**

Susan Oberlander, state librarian, George Jaramillo, director of the Taos library, and Lynette Schurdevin, library administrator of the Thomas Branigan Memorial Library in Las Cruces, told the committee that usage of libraries and increased demands for internet access and services, including classes on computer use, are putting stress on library resources statewide. They provided the committee with a leaflet on Fast Forward New Mexico, a three-year grant-funded program involving 16 libraries statewide to bring internet training, information and awareness to library users. The goal is to promote computer and internet literacy in rural areas and among minority underserved populations. They cited increased needs for computer literacy, such as requirements by many employers for job applications and by Medicaid for registrations to be submitted online. Also, many students come to libraries to access the libraries WiFi systems. They said that as these kinds of demands are increasing for library services, library budgets are being cut by both local and state governments.

The committee asked about online training opportunities, computer education classes being offered at libraries and libraries cooperating with the Workforce Solutions Department. Comments were made about outdated library resources in New Mexico and the crucial contribution of libraries to poor communities. Also, potential alternative sources of funding were discussed, including the state's limitations on use of money for operational expenses.

There being no further business, the committee adjourned at 4:30 p.m.

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

**September 27-28, 2010**
**Room 307, State Capitol**

The fourth meeting of the Science, Technology and Telecommunications Committee was called to order by Representative Roberto "Bobby" J. Gonzales, vice chair, on Monday, September 27, 2010, at 10:13 a.m. in Room 307 of the State Capitol.

**Present**
Sen. Stephen H. Fischmann, Chair
Rep. Roberto "Bobby" J. Gonzales, Vice Chair (Sept. 27)
Rep. Janice E. Arnold-Jones (Sept. 28)
Rep. Jane E. Powdrell-Culbert
Rep. Debbie A. Rodella
Rep. Nick L. Salazar
Rep. Luciano "Lucky" Varela
Rep. Richard D. Vigil (Sept. 28)

**Absent**
Sen. Vernon D. Asbill
Sen. Kent L. Cravens
Sen. Dede Feldman
Sen. Phil A. Griego
Sen. Linda M. Lopez

**Advisory Members**
Sen. Mark Boitano (Sept. 27)
Sen. Carlos R. Cisneros
Rep. Karen E. Giannini
Rep. Ben Lujan
Sen. Richard C. Martinez
Rep. Danice Picraux
Rep. Don L. Tripp
Rep. Jeannette O. Wallace
Rep. Kathy A. McCoy
Sen. William H. Payne
Sen. John M. Sapien

**Guest Legislator**
Rep. James P. White

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

**Staff**
Gordon Meeks, Legislative Council Service (LCS)
Ralph Vincent, LCS
Jeret Fleetwood, LCS

**Guests**
The guest list is in the original meeting file.

**Handouts**
All handouts and written testimony are in the meeting file or posted on the web site.

**Monday, September 27**

**Smart Grid Challenges**

Clay Doyle of El Paso Electric gave the committee a basic explanation of the idea of a "smart grid". He said the federal Department of Energy has identified the following properties for the twenty-first-century "modern" or "smart" grid, which will include:

1. being self-healing;
2. resisting attacks (cyber and real);
3. delivering power quality desired by twenty-first-century users;
4. enabling markets to flourish;
5. accommodating all generation and storage options; and
6. optimizing its assets and operating more efficiently.

He gave the committee what he called a class on "Electric Utility Systems 101". He said that the characteristics of the generation and transmission grid are different from the distribution system characteristics, and in discussing electricity systems, one needs to understand that there are separate systems involved with very different characteristics. Both systems have highly trained and skilled system controllers, he said, with responsibilities to oversee: the status and schedule of generation; the conditions of every transmission line; generation reserve capacity; control of switches; schedule of all purchases and/or sales; fault, frequency, thermal and load alarms; crew schedules and availability; and the load, capacity and state of every substation.

Mr. Doyle told the committee that the generation and transmission grid's assets are optimized and operate efficiently. He presented a schematic overview of the generation/transmission system and its general characteristics, illustrating his characterization with maps and charts. He explained that unlike the generation/transmission grid, nearly all customers are connected to the distribution grid. The distribution system is a "radial" system, not a network or a grid per se. There is generally only one path of service to a home or business, he pointed out, and the distribution system controllers are mostly outage managers. Most distribution systems have limited remote control capability, and outage managers must identify and isolate outages and see that repairs are made. In summary, he said the distribution systems do not meet smart grid characteristics and are a long way technically from becoming so, even though generation and transmission systems, on the other hand, are highly evolved to currently approximate the characteristics of a smart grid. He told the committee that the Texas Public Utilities Commission has adopted rules that will drive utilities toward a smarter grid in their distribution systems. The rules include provisions to build out:

- automated or remote meter reading;
- remotely controlled disconnect and reconnect;
- real-time customer access to meter data;
- time-stamped and portable meter data capability;
- price signaling capability;
- 15-minute interval recording capability;
- on-board meter data storage;
- open standards for future compatibility; and
- two-way communication capability.

He concluded his remarks by summarizing the challenges ahead to rolling out smart grids for distribution systems. He said that smart meters and distributed generation in and of themselves do not necessarily make a smart grid. These components are very expensive and must still overcome the lack of economies of scale and technical obstacles. A smarter grid will require new regulatory

models, policies and rate-setting procedures. The system is not presently capable of "islanding" or accommodating distributed generation on a larger scale, and he said there is no trained personnel or system online yet with which to get trained people in place. There needs to be much more research, modeling and experience before a truly smart grid is going to be built.

The committee discussion focused on questions such as are there any locations where smart grids exist? He answered that the Texas utilities system has three grids deploying, but no one system is operational yet. Existing deployment of some smart meters by the cooperatives are "advanced" meter reading and not really two-way control metering. He told the committee that it will be five to six years before this technology can be used. Chips are being installed (Zigby Chip technology) now in retail electric appliances to establish protocols for retail appliances to meet smart grid capabilities when these capabilities arrive. Other questions related to the reliance of the system and potential improvement in reliability that may be provided by smart meters and smart grids and their costs. Members also asked about comparisons of peak demand levels before smart meter deployment with peak demand levels after smart technology is deployed. There was also curiosity about how the national grid may be affected by a regional shift to smart grids. Other miscellaneous questions included concerns about integration of solar or wind energy; the effects on low-income individuals who cannot afford to pay the price of electricity now; the cost of deployment of the smart meters being borne by the customer or the utility; privacy issues about communication between the smart meter and the utility; the immense requirements for data management of 15-minute incremental meter readings; opportunities afforded by advances in thermal storage technologies; and the natural attrition of meter reading positions and reduction of the work force.

Jon Hawkins, manager, advanced energy technology and strategy, Public Service Company of New Mexico (PNM), gave his impressions of the smart grid by describing it as combining computer and network technology with the traditional utility grid. He said in the long term, it will benefit customers with better reliability, integration of more renewable energy, better information to the customer, integration of plug-in vehicles, reduction of the electric utility's carbon footprint and customer energy savings. PNM is a recipient of support for one of 11 Electric Power Research Institute (EPRI) demonstration projects worldwide. The PNM project will ensure that all of the new equipment will work together correctly and securely. The project will help PNM coordinate with many utilities to help decrease the risk of obsolescence, and it is focused on integrating renewables such as solar and wind. The EPRI provides no equipment. Mr. Hawkins showed graphs comparing the peak of solar energy availability with peak energy demand, so solar energy has the potential of meeting the peak energy demand spikes. A federal American Recovery and Reinvestment Act of 2009 (ARRA) grant to PNM will enable construction of a 500 kilowatt photovoltaic (PV) generation plant that will provide energy for about 100 homes. It will also include a two- to four-megawatt battery. The project is a utility scale distributed generation system, one of only two Department of Energy projects funded by the ARRA in New Mexico. It is in the design stage now and will begin construction in 2011. The project's use of a large battery will smooth the fluctuations of the PV electric power by storing energy at the time the sun provides the best energy for use when the grid needs it the most. This project will provide the industry with computer models that will help to understand the behavior of storage with large renewable sites. It will provide improved algorithms to optimize control of the battery systems, he said. Sandia National Laboratories, the University of New Mexico, Northern New Mexico College, Cameron Swinerton and Schott Solar are other New Mexico entities involved in the project.

Mr. Hawkins said that PNM is also participating in the Japanese consortium green building project that will demonstrate a large customer-side generation system. The project involves

construction of a sophisticated building that incorporates energy management systems and provides many collaborative research information-sharing opportunities. This Los Alamos-based project is part of the New Mexico Green Grid Initiative and has a goal of being self-sustainable for short periods of time. Equipment to be included in the project are a PV system, battery, fuel cell, gas engine, building energy management system and thermal storage.

The committee asked for elaboration on Mr. Hawkins' points about storage technologies; the breadth of a smart grid; if any legislation is needed or needs to be repealed; battery technology research; and a comparison of conventional and renewable energy costs.

**Electric Transmission Efficiency**

Dr. Satishkuma J. Ranade, director, Electric Utility Management Program, New Mexico State University, said the electricity transmission and distribution system collects electrical power and energy from a generating plant and delivers it to customers. Power is produced, transmitted and received in an amount equal to the demand of the customer, he said. This system is experiencing unprecedented changes. He defined efficiency as "output divided by input", expressed in a percentage. He said the difference between generated electricity and delivered electricity is lost in heat due to wire resistance and in the iron cores of transformers. Higher efficiency implies lower loss. The loss value is money, he testified. A transformer has a fixed loss that depends on voltage. A transformer is most efficient when it serves a demand close to its capacity. The lower the demand, the lower the efficiency of the transformer. There is a myth that 50% to 60% of the electricity is lost in transmission due to faulty lines and obsolete infrastructure. This is true only in terms of calories generated from coal relative to the light provided as measured by lumens. These kinds of efficiency data, he said, are often quoted and re-quoted until they seem like facts. But the real losses in the transmission and distribution infrastructure, he told the committee, are not so large, closer to 7% to 15%. A 2005 U.S. Energy Information Administration report estimated transmission and distribution losses of 9%. The International Electrotechnical Commission suggests losses of 3% to 5% in transmission and 8% to 15% for the complete transmission and distribution system.

With these more realistic figures of inefficiency, Dr. Ranade said, the incentive to improve efficiency is there, but the benefits must be balanced against the cost of technology needed to achieve savings by efficiency improvements. As long-term impacts such as carbon issues are recognized, modeled and costed out, the emphasis on even small improvements in efficiency will grow. It is not just one component; rather, it is necessary to consider all parts of the energy production, delivery and utilization infrastructure. Production efficiencies continue to improve, and there is broad consensus that as much as a 30% demand in reduction will be achieved through end use efficiency improvement, but perhaps more can be achieved through distributed generation. He said these efficiency improvements dwarf what can be achieved through transmission and distribution efficiency improvement.

The primary source of losses in transmission and distribution is resistance of wires. As electric energy moves through wires, some energy is required to overcome resistance and is manifested as heat in the wires. Transformers are also a source of energy losses as voltage is changed. There is a core loss or "iron" loss inherent in this process. Inefficiencies are higher during peak demand periods. However, the current management methods for reducing inefficiencies are complex. It is generally accepted that the following options are available to improve efficiency:

- using higher efficiency transformers/lower resistance conductors;
- re-conductoring transmission lines;

- superconducting transmission;
- demand reduction; and
- voltage optimization (requiring smart meters).

Dr. Ranade closed his remarks by saying that little regulatory guidance exists as to whether efficiency investments will be approved and rate-based. Utility level efforts for improving efficiency will be enabled through public policy that properly provides incentives for capital expenditure.

The committee followed up with discussion on:

- the need to address the issue holistically as opposed to focusing on discreet components;
- the importance and role of the Tres Amigas project near Clovis to connect the three national transmission grids;
- direct current compared to alternating current (AC) and the issue of efficiency losses caused by the early adoption of the AC standard;
- the potential role of nuclear power; and
- the definition of combined cycle power generators (co-generation of power, gas to heat to turbine generation).

**Boulder, Colorado's, Smart Grid Experiment**

Mary Fisher, vice president of strategy technology, Xcel Energy, described for the committee Xcel's pilot project in Boulder as a technology pilot to explore smart grid tools in a real-world setting. She said the goals are to create a test bed; build skills and experience; prove or disprove hypotheses about the smart grid; evaluate benefits; and leverage talent. She explained the rationale for selecting Boulder as a test bed and that it involves eight cooperating organizations. The backbone of the project is an information technology infrastructure that includes more than 20 software applications to be developed and integrated with one another. There will be 95 interfaces to new and legacy systems over two new architectures. The system will include multiple new security technologies; a new sophisticated communication network, including over 200 miles of fiber-optic cable; 46,700 premises enabled with broadband over power line (BPL); and automated substations and feeders. Four substations will be automated, and four feeders will be automated with 23 monitored current and voltage sensors. She said it will also include 4,721 transformers monitored, and two-way smart meters will be installed on more than 23,000 customer locations. She characterized the expected benefits of the smart grid by comparing a hypothetical scenario of a transformer overload with and without smart grid technology in service. In a situation where an acute transformer overload occurs at the peak demand hour of 3:00 p.m. on a hot summer day, the smart grid system could respond to the problem and avoid a power failure and any interruption to customer power delivery; if the same event happened to a conventional grid system, a failure and service interruption might last for several days.

The benefits of a smarter grid are anticipated to include:

- early detection of problems;
- shorter and fewer failures;
- enhanced power quality;
- a better grid efficiency;
- 15-minute updates on energy use;
- remote reading of meters;
- improved maintenance; and
- better customer satisfaction.

Three custom pricing plans are being provided to customers in Boulder: time of use, critical peak and peak-time rebate. As of October 2010, 2,000 customers have smart meters. A program of sampling will be conducted for both participants' and nonparticipants' satisfaction. The in-home smart device pilot will be expanded to 5,000 in March 2011. A component of the pilot is a plug-in vehicle test with the collaboration of Toyota, the University of Colorado-Boulder and the National Renewable Energy Laboratory. Its objectives are to test consumer behavior and system impacts; communications systems and protocols; and vehicle and battery performance.

The committee discussed:

- the schedule of the pilot (reporting on results of the tests by the end of 2010); and
- the role of energy audits.

**Galvin Electricity Initiative**

Kurt Yeager, executive director, Galvin Electricity Initiative, and John J. "Jack" McGowan, chief executive officer, Energy Control, Inc., told the committee that today's grid is comparable to horse trails relative to the automobile a century ago, i.e., unreliability and inefficiency costing the economy more than a trillion dollars in lost value. The cost to upgrade, in comparison, is estimated to be $50 billion a year for 10 years. They talked about the potential to have hyperefficient systems in which consumers can "set it and forget it". What makes the system of the future smart is its ability to self-heal and self-manage, thus improving reliability and efficiency. This presentation echoed previous presentations in its definition of what comprises a smart grid. The presenters gave a history and purpose of the Galvin Electricity Initiative, whose mission is "to catalyze the transformation of the electricity system to one that best serves and adapts to changing needs of consumers". The initiative was formed in 2005 by Bob Galvin, former chief executive officer of Motorola, "to leverage continuous quality improvement methods and establish governance that focuses on consumer empowerment and reliability". Their handout provided several schematic drawings to illustrate the idea of smart grid benefits. Galvin New Mexico is in the process of providing outreach services and creating a New Mexico policy review. It will be working with the Energy, Minerals and Natural Resources Department to leverage relations with Japan and other entities to use New Mexico as a smart grid test bed.

The committee discussed:

- potential legislation to foster the smart grid;
- state obstacles to local bonds for green energy;
- technological innovation and obsolescence;
- the timing of grid improvements based on policy incentives;
- current electric utility business models;
- costs to deploy a smart grid in New Mexico ($3 billion?);
- partnership with Mesa del Sol;
- specific recommendations addressing the regulatory environment to foster efficiency and/or smart grid improvements — open the retail connection to provide unqualified information to the consumer to enable the consumer to make choices; and
- load demand agglomeration ideas.

**Qwest Status and Merger with CenturyLink**

Leo Baca, Qwest, and Michael Horcasitas, Qwest, discussed Senate Bill 37, which was an industry bill that proposed to update the 25-year-old New Mexico statute that addresses effective competition to reflect today's competitive voice telephone market that is NOT regulated by the

Public Regulation Commission (PRC), i.e., wireless, cable telephone and voice over internet. SB 37 would provide the PRC with clear direction from the legislature on how to determine effective competition for voice telephone service in New Mexico. The bill would have benefited both urban and rural New Mexico by providing for consumer protection and service quality. Under the bill, the PRC would retain its authority to set wholesale rates for competitors. It was endorsed as a committee bill by the interim Science, Technology and Telecommunications Committee and the interim Economic and Rural Development Committee last year. The legislation was determined to be germane to the 30-day session, was endorsed by the PRC and was supported by Qwest, Windstream, Verizon Business and the New Mexico Exchange Carrier Group. It was opposed by Qwest competitors and a land developer. The attorney general took no official position, but voiced concerns. Committee support for this bill is requested again this year.

Edie Ortega, CenturyLink, described the proposed merger of Qwest and CenturyLink, which will create a nationwide, industry-leading communications company that:

- has an extensive broadband footprint and capabilities;
- has a 180,000-mile fiber network;
- has the enhanced ability to competitively roll out strategic products and services;
- is a strong, financially sound company;
- is a strong competitor in enterprise markets; and
- is a strong local and national operator serving five million broadband customers and 17 million access lines across 37 states.

Ms. Ortega explained the terms of the merger and the makeup of the new board and showed maps of the new service areas in both New Mexico and the nation. According to the presenter, the transaction is a win for customers, communities and government and provides a better positioned company to make investments that benefit customers in the form of broadband expansion and services and innovative products. She said the communities served will benefit as innovative services spur economic development and businesses, and government, health care and educational institutions will greatly benefit from the coast-to-coast reach of the new company's telecommunications infrastructure. The transaction requires no additional debt, and there are no financing or refinancing conditions, she said.

The committee discussed:

- the effect of the proposed merger on customers and employees and the new name;
- the need for SB 37;
- quality of service; and
- how the subcommittee voted to support the Qwest merger pending a quorum to vote on it on September 28.

**Research Applications Center (RAC) Status and Angel Investment Tax Credit**

Fred Mondragon, secretary of economic development, introduced Economic Development Department (EDD) staff and those individuals involved in angel investments and other RAC participants. Allan Oliver, deputy secretary, EDD, and Thomas Bowles, the governor's science advisor, summarized the background of the RAC, telling the committee that the RAC resulted from a clean technology commercialization working group that met to develop recommendations to establish an institution to provide statewide coordination, promote evaluation and monitoring, secure sustained funding support and stimulate technology commercialization and industry engagement at research institutions. The angel investment tax credit was adopted to cultivate the market for targeted technology products in New Mexico. The group of presenters recommends continuation of

this tax credit. The technology clusters identified for focus by the RAC are energy, environment and water; aerospace; and bioscience and health. New Mexico ranks first in federal investments in research and development, but it ranks last (even behind Puerto Rico) in state support for research and development. Consequently, New Mexico is behind neighbor states in high-technology enterprise growth. The panel described returns on investments in Arizona, Colorado, Ohio, Pennsylvania and Washington State. The panel's handout showed the "valley of death", which is the gap between grant funding and sufficient and affordable private investment. The kind of funding the state can provide is for technology maturation to bridge that valley of death. The investment range for these enterprises is pre-revenue investments of between $25,000 and $250,000. The panel gave the status of the RAC, including $71,000 of residual funds from its predecessor organization, the Technology Research Consortium. The panel is asking the legislature for $8 million in total capital support and funding for operational expenses, the amount of which has not yet been determined.

The angel investment tax credit was described, and the committee was told it will sunset in 2011 if the legislature does not extend its life. It is essential, according to the presenters, to support early stage companies trying to commercialize technology from the national laboratories in New Mexico. The presenters said that more than $8.5 million in private investments have been stimulated in New Mexico since 2007 because of the credit. The state's investment has been returned tenfold because only $790,000 in tax credits has been issued. Ninety-six separate investments have been made from 71 different investors, resulting in more than 28 companies being established and creating 150 jobs, with only two companies failing, they testified.

The committee discussion focused on:

- the location of the RAC and its staff and budget;
- Sandia Science and Technology Park as a model;
- the potential use of stimulus funds for the RAC;
- the problem with technology transfer is the need for development money, which is the risky part;
- New Mexico is the fastest growing state for angel and venture capital investments only because it started so low among other states;
- public access to information about technology investments;
- the state should not be the source of financing startups; this should be the role of the private sector;
- intellectual property sharing and capital ownership by the state;
- appropriateness of product investments;
- relationships with the educational community;
- criteria of high-wage jobs;
- a "clawback" requirement if a company invested in moves out of state; and
- the state budget situation, the search to repeal tax credits and the implication of restricting existing tax credits on investments in technology.

The committee adopted the minutes of the August meeting and approved a motion from September 27 to support the merger of Qwest and CenturyLink. A request was made to have the Qwest bill on the agenda for the final meeting of the committee for potential endorsement by the committee.

**Industrial Environmentalism**

Brandon Barbello, chief executive officer, Virtu Clean Technology (VCT), told the committee that the European economy is in disarray, the Asian models are "eating our lunch" and

America must play a forward-looking role. But, he emphasized, the United States does not have a free market. He said VCT has been exploring the business model of a kilowatt-scale solar Sterling engine concentrator power generator to provide distributed power generation, which would be more affordable, reliable and compact and easier to install than solar panels. Mr. Barbello said this is the kind of business model that the country needs to develop because the United States is losing carbon economy jobs, is relying on obsolete infrastructure and has high capital costs, slow returns, changing lifestyles and ineffective industry regulation. The United States needs to transcend these handicaps fast, he said, and he called for consideration of government incubation of resident clean technology companies; tax cuts and help with property acquisition; research and development support; intellectual talent sourced from local universities; consulting from Los Alamos National Laboratory and Sandia National Laboratories; and jobs skills courses taught to the community by resident companies with guaranteed employment for graduates. He said it is urgent to get the money moving for development of a new public-private paradigm that includes reallocation of state venture capital to a special development zone. The state should take an interim equity position and exit at the time of a merger or initial public offering. A government board member can act as a counselor. The firms should maximize employment of local people and resources. Investors will be invigorated by the precedent set by the state's financial and in-kind support. A governmental entity picks a direction and fosters a network of local, national and international banks and venture capitalists for a phased incubation period with a first-phase investment of $5 million, a second-phase investment of $10 million and a third-phase investment of $5 million.

Mr. Barbello told the committee that VCT is now in a research and development phase. Within five years, the company will create 500 to 1,000 manufacturing jobs, he said. VCT's partnership action plan is to finish the research and development phase within New Mexico universities, including Northern New Mexico College, where VCT will be simultaneously training a work force in manufacturing and installation processes. Then the goal is to scale up to mass manufacturing, employing those who have been trained to deliver specialized installers to customers all over the world. As the first resident company in the special development zone, VCT would set the precedent for many companies to follow, he said.

The committee expressed concern about:

- projections by companies seeking state investments; and
- the storage of solar energy (hydrogen electrolysis-of-water companies).

**Department of Information Technology (DOIT) Data Systems Responsibility**

Marlin Mackey, secretary of information technology, told the committee that $42 million in federal grants have been awarded, including a broadband mapping grant ($1.8 million); a broadband interoperability grant ($38 million); and a broadband mapping grant part two ($2.8 million), which have resulted in $5.3 million in rate reductions and a savings of $3.5 million. He gave a summary of the department's mission and structure as well as its authority to provide information technology services over various state agencies. The judicial branch is not under the authority of the DOIT Act, although the Administrative Office of the Courts (AOC) participates on the Information Technology Commission (ITC) in an advisory capacity. The AOC and DOIT work together on interrelated projects whenever appropriate. When utilizing the DOIT, services are required to follow DOIT rules and standards for that service, regardless of agency affiliation, and are subject to the processes and procedures for that service. Secretary Mackey said that the legislative branch is also not under the authority of the DOIT Act. The Legislative Finance Committee (LFC) and the LCS participate on the ITC in an advisory capacity, as do the House Rules and Order of Business Committee and the Senate Rules Committee. The LFC participates in the regular Project Certification Committee. The

DOIT provides review of house standing committees, the house chief clerk, the senate chief clerk, joint permanent committees and the New Mexico Legislative Council.

The committee asked about:

- the backup system, health care and personnel;
- financial data for state finances;
- top agencies prioritized for inclusion in a backup system;
- the budgeting process and rate reductions;
- the role of the ITC in setting rates;
- preparation for potential disaster response situations;
- communication gaps and connectivity of emergency responders and the E911 system;
- geographic information system duplications;
- of the six networks, are there any that are particularly tricky? Telehealth and public education (K-12); and
- distance learning capabilities of the DOIT network.

**Barriers to Renewable Energy Development**

Tom Wray, project manager, SunZia, provided the committee with copies of various endorsements, testimonials and comments of parties of interest in the planning process for proposed SunZia transmission line corridors. These comments were generally favorable and supportive of the project. He summarized the status of the project and provided a map of the corridor analyses and scoping for the environmental impact statement. The project is a transmission project only and does not include power generation in the project scope. The proposed route length is about 460 miles that will interconnect with at least five substations: SunZia East (Lincoln County), Pinal Central/Tortolita (Pinal County, Arizona), SunZia South (Luna County), Willow (Graham County, Arizona) and Hidalgo II (Hidalgo County). Configuration options include two 500-kilovolt AC lines or one 500-kilovolt AC line and one 500-kilovolt direct current line. The proposed route is primarily on public lands, 84% in Arizona and 82% in New Mexico. The typical right-of-way width will be 200 feet per line and up to 1,000 feet for two lines. The towers will be all-steel structures about 130 feet to 160 feet in height, and the spans between towers will be 1,300 feet to 1,500 feet. He showed the committee pictures of the types of towers to be used and maps of renewable energy resources that the project intends to connect to in markets in Tucson and farther west. Partners in and investments for the project are coming from Energy Capital Partners (an equity investment fund manager), Salt River Project (the Arizona Power District), Shell WindEnergy (a Royal Dutch Shell company), SouthWestern Power Group (a generation and transmission development firm), Tri-State Generation and Transmission Association (multistate generation and transmission association) and Tucson Electric Power.

The six partners will invest in the permitting of SunZia. Eighty-five percent of SunZia is made up of private capital investments that will be recovered through leasing transmission capacity to generators. New Mexico residents will not pay for SunZia unless a local utility company purchases capacity from SunZia to serve customers in New Mexico or becomes a partner in the project and recovers its pro rata investment through its retail rate base. Construction and operations costs will be paid through the transmission service contracts by users. Completion is expected by 2014. There have been three phases of environmental impact scoping involving 14 public meetings. He provided the committee with dates, locations and attendance figures for each of those meetings. He also provided dates and a frank explanation of the substance of discussions with military personnel and their concerns and potential accommodations by SunZia to their issues, which are

mostly air clearance for training operations at White Sands Missile Range and Fort Bliss and radio communications interference.

The committee discussed:

- capacity of wind in eastern New Mexico and capacity of the transmission lines to carry its power;
- capacity per tower (1,000 kilowatts to 1,500 kilowatts on the lines);
- requirement for "peaker plants" to maintain load;
- clarification that the cost of the project will be borne by the customers of the power, not New Mexico residents, unless their utilities purchase energy from SunZia;
- the relation of SunZia to Tres Amigas;
- relationship to wind sources in Texas and Oklahoma;
- capacity to expand kilowattage that the lines will be carrying;
- nature of military objections;
- environmental issues, such as bird habitat and potential mortalities;
- status of current wind projects in Texas and Oklahoma to deploy connections to SunZia;
- estimated permitting cost equals $25 million;
- timing and scheduling of getting capacity to markets relative to competitors;
- the economic impact is substantial;
- a matrix of pros and cons for each alternative route;
- federal production tax credits;
- service to local underserved areas;
- the difficulty of competing states having to go through private property rather than public property; and
- a total cost of at least $1 million per mile, not counting right of way or substation, i.e., $1.3 billion to $1.5 billion in total costs.

**New Mexico Renewable Energy Transmission Authority (RETA) — Update**

Jeremy Turner, director, RETA, gave the committee an update of RETA activities. He said the High Lonesome Mesa (HLM) project (a 100-megawatt wind farm in Torrance County) created approximately 200 construction-related jobs and 10 permanent operation and maintenance jobs. The total revenue projected over the life of the project is $580 million, approximately $19 million over 30 years for site leases to local land owners and approximately $14 million in payments-in-lieu-of-taxes paid over 30 years to Torrance County and the Estancia Municipal School District. He said the RETA will finance transmission upgrades of approximately $65 million. In December 2009, the RETA board of directors approved an authorizing resolution for the sale of bonds not to exceed $85 million. In February 2010, work began on marketing the bonds (a six-week process). In April 2010, Cargill filed a complaint against PNM with the Federal Energy Regulatory Commission (FERC) that included the request to invalidate the transmission rights of HLM. The FERC ruled in July 2010 to uphold the transmission rights of HLM, and in August 2010, discussions began again with potential investors. Marketing efforts are underway, and the RETA hopes to have bonds closed by the end of the calendar year.

Senate Memorial 44, sponsored by Senator Timothy M. Keller, asked that the RETA's responsibilities include developing a map and supporting documents identifying existing generation and transmission lines and renewable energy resource zones to support development and asked for coordination with other agencies to prioritize regions with low or minimal land development conflicts. It also asked the RETA to identify and prioritize the best options for potential transmission corridors. The RETA does not have any statutory authority to obligate any developer

to build a transmission line within an identified corridor. The intent is to help mitigate any potential environmental, wildlife and cultural damage through the identification of these corridors. The RETA is proceeding with this effort with the help of various stakeholders in an attempt to identify the areas best suited for possible development, he said. The RETA has tried not to interfere with ongoing efforts by large regional projects such as SunZia, High Plains Express and the Santa Fe Line. Specific rights of way within an identified corridor will need an environmental review prior to construction. The RETA would like to identify funding to complete the environmental work on each corridor in order to expedite the siting and building of lines. He presented the second iteration of a draft corridors map and explained that the map will be changed substantially based on comments received through this process. The RETA is currently working on a third iteration of the map, which will be subject to a 30-day public comment period. A stakeholder meeting will be held in December to discuss the new map of draft corridors and next steps.

Mr. Turner told the committee that the Governor's Task Force on Statewide Electricity Transmission Planning met on July 8, 2010 to begin mapping a statewide clean energy transmission system. The task force will prepare recommendations for the governor and the RETA's board of directors regarding opportunities and steps to enhance the statewide electricity transmission grid, which will include any appropriate collector systems, financing options and cost-recovery options. The recommendations will be on a five-, 10- and 20-year planning horizon. This report is due November 1, 2010. He gave a time line for action by the governor's task force. He also explained that Los Alamos National Laboratory conducted an independent study to evaluate statewide transmission concepts, economic benefits and cost allocation methodology. The study began on June 24, 2010 and will be complete on September 30, 2010. The study is analyzing two potential systems, looped versus radial line upgrades, necessary to export 5,200 megawatts of generation. It will include an estimate of the total direct and indirect jobs that will be created, the potential tax implications of each plan and the tax required to support each potential system.

The committee discussed:

- the nature of objections to the proposed corridors;
- the ownership of existing rights of way;
- revolving fund potential to maintain the work of the RETA; and
- the RETA budget status.

There being no further business, the committee adjourned at 3:35 p.m.

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

**October 27, 2010**
**Room 322, State Capitol**

The fifth meeting of the Science, Technology and Telecommunications Committee was called to order by Senator Stephen H. Fischmann, chair, on Wednesday, October 27, 2010 at 9:05 a.m. in Room 322 of the State Capitol.

**Present**
Sen. Stephen H. Fischmann, Chair
Rep. Roberto "Bobby" J. Gonzales, Vice Chair
Rep. Janice E. Arnold-Jones
Sen. Vernon D. Asbill
Sen. Dede Feldman
Rep. Jane E. Powdrell-Culbert
Rep. Debbie A. Rodella
Rep. Nick L. Salazar
Rep. Luciano "Lucky" Varela

**Absent**
Sen. Kent L. Cravens
Sen. Phil A. Griego
Sen. Linda M. Lopez
Rep. Richard D. Vigil

**Advisory Members**
Sen. Carlos R. Cisneros
Rep. Ben Lujan
Rep. Kathy A. McCoy
Rep. Jeannette O. Wallace

Sen. Mark Boitano
Rep. Karen E. Giannini
Sen. Richard C. Martinez
Sen. William H. Payne
Rep. Danice Picraux
Sen. John M. Sapien
Rep. Don L. Tripp

**Guest Legislator**
Sen. Nancy Rodriguez

**Staff**
Gordon Meeks, Drafter, Legislative Council Service (LCS)
Ralph Vincent, LCS
Jeret Fleetwood, LCS

**Guests**
The guest list is in the original meeting file.

**<u>Wednesday, October 27</u>**

Senator Fischmann began by having members of the committee introduce themselves.

**Broadening E-911 Surcharge**

Shirley Whatley-Valdez, chair, E-911 Directors Affiliate, New Mexico Association of Counties (NMAC), and Ken Martinez, vice chair, E-911 Directors Affiliate, NMAC, provided the committee with an update regarding funding for the E-911 system. They began by introducing E-911 directors from several New Mexico counties and providing the committee with a proposed bill. Ms. Whatley-Valdez and Mr. Martinez explained that their proposal would add the E-911 surcharge already collected on most phone bills to some of the new technologies used in place of land-line phones. They noted that the number and use of land lines have been steadily decreasing for a few years, which has resulted in declining revenue collected from the E-911 surcharge. Ms. Whatley-Valdez and Mr. Martinez indicated that the proposed legislation focuses mainly on voice over internet protocol (VOIP) phone use and prepaid wireless phones, the use of which appears to be steadily increasing. They noted that adding the E-911 surcharge to those technologies would likely help make up for some of the revenue the Enhanced 911 Fund has lost due to declining land line use.

Questions and comments included the following:

- While the surcharge will not be increased, the proposed legislation would levy the charge on some phone users who do not currently pay it.
- The surcharge added to VOIP and prepaid wireless users would be paid at the time of purchase.
- Wireless phone users already have the surcharge added to their monthly contracts.
- Some monthly VOIP subscribers would see the surcharge added to their monthly bills.
- The Department of Finance and Administration currently administers the Enhanced 911 Fund.
- Because the Public Regulation Commission (PRC) does not have oversight over VOIP, and the proposed legislation would not affect phone rates, no PRC approval would be needed in addition to passage of the legislation.
- Prepaid phone cards may not be affected by the proposed legislation.
- Some phone users who employ land lines, wireless phones and VOIP may have to pay the E-911 surcharge three times under the proposed legislation.
- The proposed legislation follows model legislation under consideration in other states.
- Problems exist with the model legislation, such as the authorization in it to pursue legal action in the collection of fees.
- Retailers who carry prepaid wireless and VOIP software have not yet been consulted on the proposed legislation.

- The surcharge on prepaid items would be a predetermined percentage of the overall purchase.

- Some low-income customers would be exempt from the surcharge once they provide the proper paperwork.

- The surcharge would go to the Enhanced 911 Fund to be used for equipment and training of E-911 operators.

- The Enhanced 911 Fund pays for 911 calls, radios, dispatchers and centers, all of which cost much more than what is available from the fund.

- Issues exist regarding the effective date contained in the proposed legislation.

- There are E-911 issues unique to Espanola and Rio Arriba County.

**Right-of-Way Fees**

Tito Chavez, NMAC lobbyist, provided the committee with an update regarding an attempt made during the last legislative session to address the issue of right-of-way fees.

Questions and comments included the following topics:

- use of right-of-way easements versus eminent domain condemnations;

- relocation fees may be added to customer bills throughout a utility's service area to finance a project that may only benefit some of those customers;

- fees are ultimately imposed upon consumers because other entities pass them on;

- utilities cannot condemn public property; instead, they rent it;

- counties are unable to collect fees in the same manner as cities do, although counties would prefer to be able to collect them the same way;

- fees are ultimately a tax on consumers and may merit a discussion on capping them;

- while a positive referendum is required in order to exceed four percent franchise fees, those fees still tend to hit low-income customers the hardest;

- many local governments do not negotiate fee agreements that are beneficial to them;

- fees appear as a separate line item on a customer's bill; and

- no objections to the concept were noted by the committee.

**University of New Mexico (UNM) Research, Research Centers and Renewable Energy**

Dr. Julia E. Fulghum, vice president for research and economic development, UNM, provided the committee with an overview of UNM's academic standards and research program opportunities. She explained that the school has about $396 million in research awards under its management, and it has enjoyed significant success from the federal American Recovery and Reinvestment Act of 2009. Dr. Fulghum discussed the university's involvement in start-up companies, highlighting the economic impact of such companies through investment, sales and jobs. She also provided the committee with an overview of some of the major research areas at UNM, including materials science, emerging and sustainable energy and computation and visualization. Dr. Fulghum then discussed some of the work performed by UNM in addressing the oil spill in the Gulf of Mexico.

Arup K. Maji, interim dean, UNM School of Engineering, provided the committee with an overview of the makeup, and work performed on behalf, of the UNM School of Engineering, pointing out that the $31 million in faculty research funding awarded to the school counts as income for the state's economy. He also explained that much of the funding awarded to various UNM research projects was leveraged into significantly more money in grants and other revenue sources that went on to fund numerous other positions. For example, Professor Maji said, the $200,000 awarded to the biomedical research program helped generate $2 million in additional research funds.

Professor Maji discussed the engineering school's involvement in emerging and sustainable energy research, explaining that current energy research is focused on UNM's Center for Emerging Energy Technologies (CEET) and its Center for Micro-Engineered Materials (CMEM). He pointed out that about $9.8 million in energy-related funding had been appropriated to CEET, while another $4 million was dedicated to CMEM. Also, Professor Maji noted that collaborative activities are under way with 23 private companies, six national laboratories, 23 national universities and four international universities.

Plamen Atanassov, director, CEET, provided the committee with an overview of the center's mission, programs and partnerships. He began by pointing out that New Mexico enjoys one of the most diverse renewable energy landscapes in the country. He detailed the various subdisciplines associated with renewable energy technology, such as materials devices, systems and networks, fuels and energy carriers and storage devices. Professor Atanassov explained how many of the various UNM research programs were involved with each of those disciplines and the work conducted to this point in each of them. He noted the funding possibilities of continued research in those disciplines, pointing out the steadily increasing amounts already appropriated. Finally, Professor Atanassov discussed the individual programs of study available at UNM that are associated with emerging and renewable energy technologies.

Questions and comments included the following:

- some, but not enough, UNM research funding finds its way to New Mexico high schools to encourage and recruit in-state students to UNM's research programs;

- the process for, and number of patents sought by, UNM's research programs;

- the preponderance of issues raised at the recent Council of State Governments-West were associated with renewable energy technology;

- UNM research on geothermal energy sources and the potential for transfer of those technologies to start-up companies;

- the patent process involves a potential backlog of several years in the national patent office, even after the recent streamlining of the process;

- the difference between investments in start-up companies' licensing of technologies by the university;

- the value of royalties paid to the university for technology licenses varies dramatically;

- the difficulty of predicting which technology licenses will eventually pay off and which will not;

- investment in nuclear technology research exists, but it is relatively small because the U.S. Department of Energy is the sole source of funding for such research, and year-to-year funding levels are somewhat unpredictable;

- the potential for duplication of effort within, and consolidation of various renewable energy programs at, the university;

- the overall effect of UNM's reduction of graduate assistant positions on research programs;

- decisions regarding the final number of graduate assistant positions available through the university are still pending;

- issues regarding potential difficulties in engineering degree matriculation;

- significance of selection of UNM as one of the top-10 Hispanic-serving institutions in the nation;

- the increase in the number of Hispanic students enrolling in UNM's engineering program;

- efforts to bring high-technology jobs to New Mexico are supported by in-state development of a well-educated work force;

- the significance of the angel investment tax credit in encouraging start-up companies associated with the university;

- the gap between technology development and product marketing has repeatedly been identified as the biggest obstacle to economic development originating from in-state academic research; and

- the exportation of energy and associated intellectual capital can be helped along through the construction of energy transmission lines, but it also involves continual retention of the state's best minds, as opposed to allowing promising young people to seek work outside of the state.

On a motion made, seconded and approved, the minutes of the September meeting were approved as submitted.

**Renewable Energy, Efficiency and Ratemaking: What Is Working**

Ken Costello of the National Regulatory Research Institute provided the committee with an overview of the utility ratemaking process as it relates to the challenges presented by renewable energy. He began by explaining that energy efficiency initiatives involve the complex relationship among consumer behavior, utility financing and regulatory oversight. He noted, for example, that use of the existing rate construction model discourages utilities from embracing most energy efficiency measures because they are likely to limit the profit that utility companies would otherwise enjoy.

Mr. Costello stated that aligning a utility's financial interests with energy efficiency is one of the keys to true energy efficiency. However, he outlined the basic problems with such an arrangement, particularly those facing utilities and regulators. Mr. Costello discussed some of the different ratemaking mechanisms that might help encourage such a climate. He also discussed the basic elements of good ratemaking, such as consideration of all the interests involved and tradeoffs that each stakeholder may have to make in order to reach a suitable balance between the interests of both the consumer and the utility.

Mr. Costello discussed some of the mechanisms state policymakers might use to promote renewable energy. For example, he noted that several states, including New Mexico, have implemented renewable portfolio standards, mandating increased investment in renewable energy sources. Mr. Costello did point out, though, that much of the cost associated with the increased investment in renewable energy is eventually passed on to consumers.

Mr. Costello discussed other methods that states might employ to encourage use of renewable energy, including renewable energy certificates and net metering programs. He explained that net metering programs encourage investment in renewable technology by consumers, particularly by enabling them to offset their own consumption by allowing their meters to run backwards when they generate electricity in excess of their demand. However, Mr. Costello acknowledged that the initial investment required to install renewable energy generation equipment, mostly photovoltaic solar panels, is significant and presents an obstacle to net metering systems.

Questions and comments included the following:

- the effect on the overall ratemaking process of the increasing number of households that move to self-sufficient energy models;

- the main alternative to energy efficiency is increasing the capacity of utilities, which tends to be much more expensive for customers; and

- ratemakers tend not to treat efficiency very seriously for now, but unexpected innovations could have a dramatic effect on the ratemaking process.

**Clean Technology Commercialization**

Brendan Miller of the Economic Development Department (EDD) began by providing the committee with answers to a number of questions raised during the last meeting, mostly regarding the angel investment tax credit. Mr. Miller and Ellen Verseth, also of the EDD, emphasized that the tax credit helps to create and attract new high-wage jobs in New Mexico.

Mr. Miller provided the committee with testimony regarding the commercialization of clean energy technology. He explained that New Mexico enjoys a number of assets that help provide an advantage in both clean energy production and potential investment opportunities. However, Mr. Miller also pointed out that while New Mexico ranks particularly high both in the nation and among neighboring states in federal research and development funding, it ranks extremely low in terms of state funding for the same purpose, placing it at a distinct advantage among the neighboring states. He also highlighted the significant gap between research funding and product development and marketing.

Mr. Miller provided the committee with a number of recommendations, including:

- improving statewide coordination, promotion, evaluation and monitoring of research efforts;

- expanding on incentives that stimulate technology commercialization;

- strengthening incentives that help attract angel, venture capital and business research and development investments; and

- cultivating the market for targeted technology products in New Mexico.

Questions and comments included the following topics:

- investments in the New Mexico Institute of Mining and Technology's high-energy materials research laboratory;

- investing in development clusters, rather than individual projects, makes it difficult to encourage investment in those programs that show promise;

- local machine shops may not qualify for investment using established criteria, but they serve as a fundamental component of project development and commercialization that should not be ignored; and

- no project originating in New Mexico has successfully made the transition from research project to start-up company to profitable company yet.

**Los Alamos National Laboratory (LANL) Energy Transmission Study Report**

Jeremy Turner, director, New Mexico Renewable Energy Transmission Authority, and Loren Toole of LANL provided the committee with a report regarding a LANL study on renewable energy development. They explained that the project involved three phases: (1) screening of transmission alternatives; (2) grid analysis and collaboration with New Mexico's transmission providers; and (3) final evaluation of grid operational issues prior to actual construction.

Mr. Turner and Mr. Toole explained that only phase one of the project had been completed, and they provided the committee with an update on the project. They explained that the study was based on the following assumptions:

- New Mexico's transmission grid must be expanded to meet projected load growth, to increase use of renewable resources and to maintain reliable delivery of power;

- that projections show steady growth in electricity demands of western U.S. consumers over the next 20 years; and

- a reliance upon the Four Corners transmission hub to serve as New Mexico's primary means of exporting power.

Mr. Turner and Mr. Toole discussed the key findings of the study, explaining that New Mexico enjoys significant capacity for renewable energy production and exportation and can realize tax income from those power exports. They provided the committee with maps detailing various transmission line locations. Mr. Turner and Mr. Toole also discussed the potential economic impacts of the various transmission line locations and detailed the potential next steps suggested by the LANL study, particularly concerning collector cost recovery and evaluation (including stakeholder meetings) of both collector plans explored by the study.

Questions and comments included the following topics:

- the number of jobs created by increasing New Mexico's power transmission capabilities tends to increase as the projects move forward;

- many of the jobs created by a transmission construction project involve relatively temporary construction jobs;

- the results of the LANL study do not point toward one plan or another; rather, they illustrate the complexity associated with expanding New Mexico's renewable energy transmission capacity and some of the decisions facing lawmakers as things move forward;

- most transmission line developers and investors assume a relatively high rate of return on transmission projects, based upon projected electricity costs over the next 20 years;

- the potential rate of return from construction and operation of renewable energy transmission lines versus that realized by New Mexico's investment in its permanent funds;

- similar transmission projects are being discussed in a number of western states, but none of them is currently under construction;

- much of New Mexico's renewable energy originates in eastern New Mexico and requires additional transmission line hookup and capacity in order to be exportable to other markets;

- phase one of the project is a finished document, but it is still only one step in an overall process;

- the numbers suggested by the project are always subject to change, but they do suggest that exportation of renewable energy is a viable investment; and

- some reasonable fluctuation in the numbers is expected, but the intent is for the project to move forward and maintain transparency.

Senator Fischmann reminded committee members that the next meeting is scheduled for November 29-30.

The committee adjourned at 4:20 p.m.

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

**November 29-30, 2010**
**Room 311, State Capitol**

The fifth meeting of the Science, Technology and Telecommunications Committee was called to order by Senator Stephen H. Fischmann, chair, on Monday, November 29, 2010, at 9:10 a.m. in Room 311 at the State Capitol.

**Present**
Sen. Stephen H. Fischmann, Chair
Rep. Roberto "Bobby" J. Gonzales, Vice Chair
Rep. Janice E. Arnold-Jones
Sen. Dede Feldman
Rep. Jane E. Powdrell-Culbert
Rep. Debbie A. Rodella
Rep. Nick L. Salazar

**Absent**
Sen. Vernon D. Asbill
Sen. Kent L. Cravens
Sen. Phil A. Griego
Sen. Linda M. Lopez
Rep. Luciano "Lucky" Varela
Rep. Richard D. Vigil

**Advisory Members**
Rep. Karen E. Giannini (11/29)
Sen. Richard C. Martinez
Rep. Danice Picraux
Sen. John M. Sapien
Rep. Don L. Tripp
Rep. Jeannette O. Wallace

Sen. Mark Boitano
Sen. Carlos R. Cisneros
Rep. Ben Lujan
Rep. Kathy A. McCoy
Sen. William H. Payne

**Guest Legislator**
Rep. Thomas A. Anderson (11/29)

**Staff**
Gordon Meeks, Legislative Council Service (LCS)
Ralph Vincent, LCS
Jeret Fleetwood, LCS (11/29)
Adan DelVal, LCS (11/30)

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

**Minutes Approval**
Because the committee will not meet again this year, the minutes for this meeting have not been officially approved by the committee.

**Guests**
The guest list is in the meeting file.

**Handouts**

All handouts and written testimony are posted on the web site and are in the meeting file.

**Laboratory Directed Research and Development**

James Woodard with the innovations and partnerships program at Sandia National Laboratories told the committee that Sandia National Laboratories is a multi-program laboratory managed and operated by Sandia Corporation, a wholly owned subsidiary of Lockheed Martin Corporation, for the U.S. Department of Energy's National Nuclear Security Administration. He said that the Sandia Science and Technology Park, the New Mexico small business assistance program and the entrepreneurial separation to transfer technology program are all examples of the innovations and partnerships program. The laboratory directed research and development (LDRD) program is the sole source of discretionary research and development funds for staff-generated entrepreneurship. The LDRD creates the future of the laboratories, he said. The quantum information science and technology project resulted in next-generation computing leadership, for example. Quantum computing is expected to provide exponential advances in speed over classical computing, but, to date, the hardware components of such a system do not exist.

A second project, he said, is exploration and development of air bearing heat exchanger technology that could have a significant impact on energy use and efficiency. It could extend the range of electrical vehicles, solve the thermal brick wall problem, provide more efficient air conditioning and reduce electricity demand load spikes. The proof-of-concept experiments demonstrated improvement by a factor of 30 in heat transfer per unit of heat exchanger area.

A third project is the rapid threat organism recognition (RapTOR) to identify bio-threats. He said it promises to develop a new, rapid and powerful approach for identifying unknown pathogens, thus preventing or containing outbreaks in their earliest stages. An example of this is bio-warfare and infectious disease detection microsystem to rapidly detect botulism in milk. This is a clear path to a detector capable of simultaneously identifying a vast number of different agents: chemical, biological and radionuclides.

A fourth project, the sunshine to petrol project, uses solar energy for synthetic fuel production for energy sources that do not produce carbon dioxide emissions. With this technology, solar power could be used to convert carbon dioxide to synthetic fuels.

Also in the solar energy arena, a greater-than-50 percent efficient photovoltaic solar cells project shows promise for enhanced photovoltaics. He said monolithic photovoltaic cells typically produce solar conversion efficiencies in the 20 percent range. Stacked individually grown and connected junctions, each sensitive to a different region of the solar spectrum, are being evaluated at Sandia National Laboratories for greater photovoltaic system efficiencies.

A fifth project at Sandia National Laboratories involves looking at enabling secure, scalable microgrids with high penetration of renewable energy sources.

Mr. Woodward told the committee that the Sandia Science and Technology Park was founded in 1998 as a partnership tool for Sandia to create joint research and development,

commercialize new technologies, develop business, strengthen supplier relations and foster economic development.

Mr. Woodward described the mission of the New Mexico small business assistance program based on the small business tax credit that allows up to $2.4 million per lab per year in technical assistance to for-profit small businesses. It allows companies in rural counties to receive $20,000 per business each year and urban county businesses to receive $10,000 per business each year. Since fiscal year 2000, 2,666 assistances have been provided to 320 businesses in 33 counties for a dollar value of $20.7 million.

Mr. Woodward ended his presentation by explaining that the entrepreneurial separation to transfer technology program at Sandia, whereby employees may voluntarily suspend their employment for two years to try to start a business and are guaranteed reinstatement by Sandia National Laboratories if they return before expiration of the term of the agreement. Participants may start up or help expand technology businesses.

The committee discussed:

- the chasm between basic research and development and deployment;
- cooperative research in development projects;
- the thermal brick wall problem;
- collaboration between Sandia National Laboratories and Los Alamos National Laboratory;
- military installations opting out of the grid, since Holloman Air Force Base and White Sands Missile Range have been ordered to become energy autonomous by 2023;
- intellectual property ownership;
- the role of the New Mexico Institute of Mining and Technology; and
- Sandia National Laboratories' program for leaves of absence for employees who want to start a business or help an existing one.

**Clean Line Energy**

Clean Line Energy Partners representative Keith Sparks told the committee that his company focuses on building renewable energy superhighways to connect renewable resources to load centers. He said the company seeks to develop, own and operate long-haul, high-voltage, direct-current (HVDC) transmission lines across the United States. Clean Line Energy Partners' principals, partners and investors bring a unique perspective, experience and focus to transmission line development, along with a track record of success in energy project development, Mr. Sparks testified. Clean Line Energy Partners has a portfolio of projects for HVDC transmission lines to move high-quality wind and solar energy to demand centers. In the Clean Line Energy Partners business plan, the generator or load-serving entity pays for transmission capacity. Mr. Sparks said that HVDC is more efficient over long distances; transfers more power with less line loss than comparable alternating current lines; has improved reliability; enhances system stability; gives the operator complete control over power flow; improves the quality of electricity from wind projects; and helps reduce overall integration costs. He said that HVDC also has a smaller footprint, requiring narrower rights of way and lower tower height than alternating current lines. Mr. Sparks said that the planned Centennial West Clean Line will deliver renewable energy from eastern New Mexico to the west coast using a 3,500-megawatt

configuration, with 500 kilovolt to 600 kilovolt bipole transmission lines across approximately 800 miles at an estimated cost of $2.5 billion. The company plans that the preferred corridor be located across the Navajo Nation.

The committee discussed:

- the relationship of this line to others being planned, such as SunZia, Tres Amigas and High Plains;
- the source of the capital for the project;
- the relative cost and quality differences between direct current and alternating current technology;
- Sandia's development of direct current cable for burying that is currently being used in Europe;
- California's renewable portfolio standard of 33 percent by 2020;
- the potential co-location of transmission lines;
- the need for converters at both ends of the transmission line costing $250 million;
- the cost of the line, which will be $80.00 per megawatt delivered to California ($.30 per kilowatt hour, compared to $.08 to $.09 here in New Mexico);
- the correlation between high-priced renewables here and existing prices independent of the renewable portfolio standard requirements;
- the fact that the renewable portfolio standards actually create the floor for electric power prices rather than the real cost of conventional fuel sources (coal or gas) and the economics of electric power pricing;
- wind being the most economical renewable energy to meet California's renewable portfolio standards;
- the economic development benefits of the Clean Line Energy Partners-transmission line (5,000 jobs, according to Mr. Sparks);
- that the counties traversed by the proposed line corridor include Cibola, Curry, Harding, Guadalupe, McKinley, Quay, Roosevelt, Sandoval, Santa Fe and Union;
- the environmental impacts;
- price tradeoffs of burying the lines versus overhead lines;
- the use of highway corridors for rights of way;
- that the market aims for California customers; that no New Mexico utility service is expected from this line; and that no benefits other than construction jobs, taxes and rights-of-way payments are expected from this line;
- that the 5,200-megawatt transmission of renewables is expected to create 1,200 permanent jobs in New Mexico and the potential for manufacturing jobs is a secondary benefit; and
- the need to target tax credits for manufacturing jobs in New Mexico.

**Information Technology Service Life Cycle**

Marlin Mackey, secretary of information technology (IT), presented information on technology historic milestones, i.e.:

- the mechanical age 1450-1840;
- Gutenberg printing press 1450;
- Oughtred slide rule early 1600s;

- Babbage's difference engine 1822;
- Ada Augusta Byron, first programmer 1840;
- electromechanical age (1840-1940);
- voltaic battery late 18th century;
- telegraph 1800s;
- Bell's telephone 1876;
- Marconi's radio 1894;
- Hollerith's punched cards 1890;
- Aiken's Mark 1 computer 1940;
- electronic age 1940-present;
- ENIAC vacuum tube computer 1946;
- EDSAC first stored program 1949;
- UNIVAC first commercial computer 1951;
- vacuum tubes, punched cards 1951-1958;
- transistors, magnetic tape 1959-1963;
- integrated circuits 1964-1979; and
- mainframe centralized processing
- mini-computer, first distributed processing
- microprocessor, PC, GUI (graphics user interface) 1979-present.

Secretary Mackey described changes in recent IT management paradigms and compared national and New Mexico trends. He said that state initiatives, as exhibited by responses to a survey from 29 states in 2007, reveal a strong trend toward states consolidating their computing assets into a raised-floor, secured, centralized data center. Many states are utilizing remote backup data centers for the purpose of backup, disaster recovery and business continuity, Secretary Mackey said. He gave an overview of New Mexico's status in consolidation of data center services, mainframe services, application hosting, enterprise applications, email, help desk, desktop telephony, server administration, storage and backup, security, network services, cellular telephony, audio and video conferencing and other IT functions.

He then listed his department's 2010 accomplishments:

- applied/received $43 million in federal grants;
- granted a Federal Communications Commission license for a public safety network (21 granted nationally);
- reduced operating expenses by 15 percent ($7 million);
- reduced service rates by $3 million (fiscal year 2011) and $1.8 million (fiscal year 2012);
- developed the sunshine portal pursuant to the Sunshine Portal Transparency Act;
- developed a prioritized list of cost/value initiatives;
- completed a service support plan for Spaceport America;
- completed design and pricing for unified communications;
- completed Phase 1 of server consolidation;
- implemented performance dashboard;
- implemented SHARE improvements and a master schedule;
- implemented new IT governance structure;

- implemented new IT security policy and rule;
- completed development of Phase 1 for cloud services;
- updated the state IT strategic plan, which the IT Commission approved; and
- achieved successful oversight of IT projects.

The committee asked about:

- digital security of public data;
- security of physical facilities;
- personal security clearance requirements;
- legislative needs;
- the status of the sunshine portal;
- the status of the state's digital microwave system (150 towers);
- the status and quality of gateway portals to the state's supercomputer;
- the request for an inventory of state IT assets;
- the life expectancy of SHARE, the state's central database management system (10 years);
- the frequency of security notifications;
- the number of agencies without dedicated security personnel;
- the number of software applications in certain departments of state government;
- why so few agencies use firewalls; and
- the consolidation of procurement.

**Interim Committee Transparency**

Senator Sapien described the purpose of SJM 5 (2010) to require the LCS to move toward electronic document management to replace paper documents. He asked for an endorsement of the memorial again in 2011, and the committee did endorse the measure without opposition.

C. Meghan Starbuck, assistant professor of economics and international business at New Mexico State University (NMSU), told the committee that she has been researching the economics of renewable energy in New Mexico. She is currently the economics director for the National Alliance for Advanced Biofuels and Bioproducts, a U.S. Department of Energy-funded consortium. This consortium is designed to help drive algal biofuels to commercialization. NMSU is an active partner in the drive toward algal fuel commercialization, she said, and works closely with numerous partners within the state and around the country. The research program in algal fuels spans four colleges (Agriculture, Arts and Sciences, Business and Engineering), and the NMSU's Agricultural Experiment Station in Artesia. She testified that there are research collaborations with Los Alamos National Laboratory, Sandia National Laboratories, Sapphire Energy, Inc., the Center of Excellence for Hazardous Materials Management, Pacific Northwest National Laboratories, Argonne National Laboratory, University of Arizona, Arizona State University, Colorado State University, Texas A&M University and University of Central Florida. The focus of NMSU's involvement is the development of commercially viable algal-based biofuels and developing this industry in New Mexico. The two major algal biofuels projects are the National Alliance for Advanced Biofuels and Bioproducts (a $44 million U.S. Department of Energy project) and a $2.5 million project for the U.S. Air Force Research Laboratory focusing on aviation fuels. NMSU is also the lead institution on a $45 million proposal to the U.S. Department of Agriculture to research algal biofuels, she said. There are also other proposals

submitted to the National Science Foundation and to a combined funding opportunity through the U.S. Department of Agriculture and the U.S. Department of Energy. Algal biofuels for New Mexico offer the possibility of creating the type of tangible, homegrown products, technologies and industries that will be the basis of sustainable long-term growth. The promise of algal biofuels is in the ability to use current infrastructure and provide a high-quality, energy-dense fuel. Ms. Starbuck said algal-based fuels are not "green compromises", such as ethanol or biodiesel, but are truly advanced fuels that are capable of fueling military vehicles and aircraft as well as fueling commercial aviation and civilian transportation. Algal biocrude is chemically similar to petroleum-based crude oil, and researchers are finding similar chemical structures in algal biocrude as are in petroleum. This provides an exciting opportunity and a new way of looking at energy production in the U.S. and in New Mexico. By being able to grow fuels, the state can create exportable technology but not exportable jobs—all while using fewer resources than other bioenergy crops, Ms. Starbuck testified. Algae are highly efficient photosynthetic organisms that require carbon dioxide to grow, and providing this carbon dioxide can result in significant greenhouse gas emission reductions. Other environmental benefits associated with algae, and not associated with other biofuel crops, include the use of nonagricultural resources in production. Brackish waters, marginal rangeland, waste nutrients and captured carbon dioxide sources comprise the key environmental inputs. Thus, the production of algal biocrude will not compete with current agricultural resources, Ms. Starbuck said. New Mexico has extensive energy and agricultural infrastructure that the nascent algal energy industry could use. The knowledge, skills, training and employment base currently employed in the agricultural and oil and gas sectors provide key competitive advantages over most other places in the world. Ms. Starbuck said that New Mexico is a state that is at the forefront of a competitive global development push.

Based on current scale-up plans, the estimated number of jobs engaged directly in algal oil production will be 44 in 2012 and 76 by the year 2020, based on a single 100-million-gallon per year algal facility. The first 100 million gallons of algal biocrude can potentially generate 452 jobs (direct, indirect and induced) in New Mexico, with an additional $8 million in state tax revenues. State tax revenues are estimated at $8 million per 100 million gallons of algal biocrude produced, Ms. Starbuck said. This is exclusive of refining and distribution impacts that might accrue as a result of production. If New Mexico is successful in producing algal biocrude at scale and is successful at capturing significant market share, the economic impacts to the state become even more significant. If New Mexico can capture 10 percent of the upcoming renewable fuel standard of 21 billion gallons by 2022, New Mexico could see as many as 1,596 jobs in direct employment, with a total (direct, indirect and induced) employment level of 12,729 jobs, Ms. Starbuck said. The increase in gross state product could be $483 million and as much as $91 million in increased state tax revenues. If New Mexico could capture 30 percent of the renewable fuel standard, total employment could reach approximately 27,000 and tax revenues could be in excess of $200 million. As of 2007, the oil and gas extraction sector employs about 8,000 people. Thus, Ms. Starbuck testified, if successful, an algal fuel industry represents an important path forward for New Mexico.

The barriers that could prevent the promise from being achieved are:

(1) technical — the "crop protection", increasing yields, quality control, product mix, low-cost harvesting, process scale-up and logistics;

(2) economic — a function of solving the production process in a low-cost, resource minimizing system; and

(3) policy — undue costs of regulatory delays (environmental regulation is a go/no go criterion for investors).

The committee was interested in:

- photosynthesis resources in New Mexico;
- the pilot scale-up plant in Columbus financed by Sapphire Energy;
- the potential use of algal biofuel as diesel fuel;
- the use of algal biofuel in school buses;
- the altitude constraints;
- the role of universities;
- the water requirements;
- the Honeywell contract to fuel the U.S. Air Force;
- China and India's investment in algal biofuel;
- the extraction method to remove liquid versus the wet solvent extraction system using hexane and solution recovery services; and
- the volume of effluent, the use of a chelating agent and the potential use of the effluent in animal feed or recycling ponds for fertilizers.

**Telecommunications Competition and Facility Relocation Cost Recovery**

Leo Baca and Loretta Armenta, representing Qwest, spoke to the committee about deregulation of Qwest and recovering costs of relocating lines when required by local government. Two previous bills endorsed by the committee were presented, and the presenters requested endorsement again this year. The committee acted to endorse both measures without opposition.

**Government Restructuring; Committee Discussion**

In its discussion of restructuring state government, the committee spent most of its time considering the dilemma of the Public Regulation Commission (PRC). Because the PRC is a constitutional body, any proposed changes are subject to voter approval, so there was considerable discussion of the complexities of the idea of reorganizing. Several members of the committee began their comments by saying that the PRC should be repealed. But, they quickly added, that any serious proposal for eliminating the PRC or changing its authority must recognize that the existing functions and mission of the PRC must be accommodated.

For example, where should the Insurance Division of the PRC be relocated? The same could be asked about the Utility Division and the State Fire Marshal Division.

Another significant question is the clarification of jurisdictional boundaries between the federal government and the state over the various utility authorities, particularly electric power generation, transmission and distribution. This industry, like the telecommunications industry, is undergoing rapid and significant structural change, and regulatory frameworks developed decades ago for previous technological paradigms no longer make sense today with rapidly evolving technologies.

The sense of the committee was that any changes to the PRC structure or its functions should be considered after detailed review. The implications of haphazard legislation for narrow political purposes were discussed. Several comments were made about inconsistencies among the various laws enacted by previous legislatures; for example, some entities being covered by certain provisions in law while others are exempted, or certain services covered while others are not.

The nature of how politics affects elected officials rather than appointed officials was also a focus of attention. The question was asked several times: did the legislature err in creating an elected governing authority to replace appointed ones?

Whether corporate filings should be through the secretary of state or the PRC was another issue discussed. The general consensus was that this is one function that should be housed at the PRC exclusively.

Transparency was discussed in the context of the PRC, and suggestions were made that the PRC should webcast all of its hearings and that all documents filed for cases before the commission should be available to the public online. Comments were made that the PRC is not responding to technological changes, either in its own business management or its regulation of industry. Whether the PRC should regulate companies or services was asked, and committee members recognized that the legislature is partly to blame for the way it wrote the laws governing the PRC.

The quasi-judicial nature of the PRC was recognized as a problem and should be re-thought. In some ways, the PRC has been a moderating influence, and any reform should avoid the unintended consequences that previous reform efforts failed to prevent.

The themes of the discussion were the need for:

- careful evaluation of the structure and function of the PRC;
- consistency in policies;
- a replacement structure for the PRC in place before repeal or change;
- a comprehensive or holistic approach to setting policy rather than an incremental approach, whether the PRC or some other entity is setting policy; and
- credentialing of PRC commissioners or board members.

In discussion of the Energy, Minerals and Natural Resources Department, the issue of oversight and legislative review of agency rules was the theme, just as it was for the Radioactive and Hazardous Materials Committee.

Finally, E-911 was discussed at length, with no real consensus. Some felt the transfer of E-911 to the Department of Public Safety made sense while others wanted it to remain at the Local Government Division of the Department of Finance and Administration.

**Spaceport America**

Rick Homans, director of Spaceport America, gave the committee a status report of the facility. He said that the spaceport is the world's first purpose-built commercial spaceport and it is designed for next-generation, reusable space launch vehicles. The anchor tenant will be Virgin

Galactic, with a 20-year lease worth between $150 million and $250 million. The spaceport will be operational in 18 to 24 months. The site chosen for the spaceport, southeast of Truth or Consequences and north of Hatch, is ideal because of low population density, restricted airspace, clear weather, high elevation (and thus lower gravity to overcome for launch vehicles) and low latitude (ideal conditions for space access), Mr. Homans said. Construction is in full swing with 13 of 14 contracts already let and 600-plus jobs created. Completion is estimated for the second quarter of 2011. Virgin Galactic has conducted its first glide flight. The Obama administration recently announced that the United States is committed to encouraging and facilitating the growth of a U.S. commercial space sector that supports U.S. needs, is globally competitive and advances U.S. leadership in the generation of new markets and innovation-driven entrepreneurship. The president's plan validates New Mexico's vision and investment in commercial space development. New Mexico has won a $10 million grant from the Federal Aviation Administration. NMSU won a national competition to host the Federal Aviation Administration's Center of Excellence for Commercial Space Transportation, a research consortium that includes the New Mexico Institute of Mining and Technology and the universities of Florida, Colorado, Texas and California. This research focuses on subjects that include: space launch operations and traffic management; launch vehicle systems, technologies and operations; and commercial human space flight and space commerce. New Mexico is the national center for commercial space development, Mr. Homans said.

He also summarized the project's budget:

- pre-construction costs: $44.3 million;
- Phase I: $112 million;
- Phase II: $55.8 million; and
- weather station and FOD equipment: $43 million.

The committee discussed:

- initial space tests in the early 1990s;
- the status of the environmental impact statement;
- the concept of a hotel in space;
- the definition of commissioning the facilities;
- the use of New Mexico companies as contractors (all 14 companies under contract are New Mexico resident companies);
- the issuance of requests for proposals to attract local businesses;
- the location of prime contractors;
- the operational readiness review;
- risk analysis;
- participation of the Air Force Research Laboratory;
- the next steps in moving toward orbital launches;
- the membership of the Spaceport America board;
- liability issues;
- other states competing with New Mexico;
- the status of the NMSU aerospace program;
- the employment opportunities in the space-related manufacturing industry in New Mexico;

- the number of nonconstruction, permanent jobs and potential multiplier employment projections (1,000 to 1,500 jobs);
- the plans for a destination resort associated with Spaceport America; and
- the reliability of a visitation projection of 500,000 per year.

**Space Alliance Technology Outreach Program (SATOP)**

Naomi Engelmann told the committee that SATOP is asking the legislature for $65,000 to support SATOP's technical assistance to businesses involved in space commercialization. SATOP provides up to 40 hours of free engineering technical assistance to any type of small business. SATOP was established in 2001 as a nationwide program. SATOP relies on an annual federal appropriation to the National Aeronautics and Space Administration (NASA) for its funding. SATOP's alliance partner network, comprised of private engineering firms, universities and colleges, and national laboratories that have an affiliation with NASA, provides the expertise. SATOP is operated by four regional centers located in New Mexico, Texas, New York and Florida. Each center covers 11 to 15 states. New Mexico's SATOP center is responsible for the 11 western states: Washington, Oregon, California, Nevada, Arizona, Utah, Idaho, Montana, Wyoming, Colorado and New Mexico. The Regional Development Corporation operates the New Mexico SATOP center. In 2008, SATOP ceased activity nationwide due to a lack of federal funding, with the exception of Texas, which received state funding to keep its program operational. SATOP was re-funded and reestablished nationwide in 2010. SATOP is a public-private partnership with a successful track record of assisting small businesses nationwide.

According to Ms. Englemann, prior to SATOP's suspension in 2008, the program's impact on New Mexico's small businesses entailed 70 solved requests and 21 created or retained jobs. She said that there has been $4.5 million in total economic impact since reopening the program in 2010. Twenty-seven New Mexico-based small businesses have received SATOP assistance. In 2010, seven New Mexico-based alliance partners, NMSU, New Mexico Institute of Mining and Technology, White Sands Missile Range, Zia Design Group, New Mexico Manufacturing Extension Partnership, Sandia National Laboratories and TEAM Technologies, have provided assistance in more than 46 requests nationwide. For 2011, the New Mexico SATOP center has only received enough federal funding to support 15 small business requests. SATOP operates on a first-come, first-served basis. This means that it is possible that no New Mexico-based small businesses will receive SATOP assistance in 2011. SATOP is a valuable economic development tool that must be preserved in New Mexico, Ms. Englemann said.

The committee discussed:

- partnership with the Sandia National Laboratories and the Los Alamos National Laboratory small business technical assistance programs; and
- the minimum request of $50,000 to help 25 small businesses.

The minutes of the October meeting were approved.

The committee adjourned at 11:50 a.m.

Representative Rodella asked that the committee take note that Los Alamos National Laboratory had not responded to her questions. In answer to a question posed by Representative Arnold-Jones, Secretary Mackey said that there are 800 Department of Information Technology anchors statewide.

# Appendix

SENATE JOINT MEMORIAL

**50TH LEGISLATURE - STATE OF NEW MEXICO - FIRST SESSION, 2011**

INTRODUCED BY

FOR THE SCIENCE, TECHNOLOGY AND TELECOMMUNICATIONS COMMITTEE

A JOINT MEMORIAL

REQUESTING THE NEW MEXICO LEGISLATIVE COUNCIL TO ADOPT A RULE TO REQUIRE THE USE OF ELECTRONIC COMMUNICATION AND HANDOUTS FOR INTERIM COMMITTEES.

WHEREAS, New Mexico is currently experiencing a budget crisis; and

WHEREAS, requests for copies of documents from the legislature are significant in number; and

WHEREAS, the public has a right to easy access to legislative documents; and

WHEREAS, paper printing and photocopying require extensive use of energy and natural resources;

NOW, THEREFORE, BE IT RESOLVED BY THE LEGISLATURE OF THE STATE OF NEW MEXICO that the New Mexico legislative council be requested to consider proposals for rules to convert to and

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make electronic communication and handout distribution available for interim committees; and

BE IT FURTHER RESOLVED that the rules, at a minimum, provide for polling by the staff of their respective committee members to determine those members who desire to receive committee information in electronic format rather than paper and to direct all entities testifying to the respective committees to work with staff to provide those members a copy of materials to be handed out in electronic format in addition to paper documents for those who wish to continue to receive hard copies; and

BE IT FURTHER RESOLVED that copies of this memorial be transmitted to the co-chairs of the New Mexico legislative council.



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HOUSE BILL

**50TH LEGISLATURE - STATE OF NEW MEXICO - FIRST SESSION, 2011**

INTRODUCED BY

DISCUSSION DRAFT

AN ACT

RELATING TO TELECOMMUNICATIONS; ENACTING A NEW SECTION OF THE NEW MEXICO TELECOMMUNICATIONS ACT TO PERMIT THE ALLOCATION OF RELOCATION COSTS TO TELECOMMUNICATIONS COMPANY CUSTOMERS.

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF NEW MEXICO:

**SECTION 1.** A new section of the New Mexico Telecommunications Act is enacted to read:

"[NEW MATERIAL] ALLOCATION OF RELOCATION COSTS TO CUSTOMERS--COMMISSION AUDIT.--

A. Notwithstanding any other provision of law, telecommunications companies shall be entitled to recover from their retail customers, without a request for a change in rates, the actual costs incurred for the alteration, change, moving or relocation of infrastructure or facilities requested by the state or a political subdivision or instrumentality of

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the state. Thirty days prior to assessing retail customers a fee to recover actual costs incurred for the alteration, change, moving or relocation of infrastructure or facilities requested by the state or a political subdivision or instrumentality of the state, a telecommunications company shall notify the commission in writing of its intent to impose a fee on the company's retail customers as a separate line item on the customer's bill. The notification to the commission shall contain information regarding the total relocation costs incurred by the project, the calculation of the fee, the time period in which the fee will be recovered, the number of customers affected and an affidavit stating that only actual costs are being recovered and that reasonable efforts were made to mitigate the relocation costs. The telecommunications company may begin assessing the fee after the expiration of the thirty-day notice provided to the commission.

B. Upon petition by an interested party or on its own motion, the commission may conduct an investigation to verify that all information has been provided and that the fee intended to be imposed by a telecommunications company recovers the actual costs incurred for the relocation of facilities and that the telecommunications company engaged in all reasonable efforts to mitigate the relocation costs. The commission shall also determine that the time period for recovery of the fee and the number of customers affected is reasonable. The commission

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shall complete its investigation within sixty days of the date that a petition is filed or that the commission commences an investigation on its own motion, whichever is earlier. If, based on evidence presented at a hearing, the commission finds that a telecommunications company is not recovering its actual costs incurred, the commission may order modifications or adjustments to a fee imposed pursuant to this section and to any required customer credits so that the telecommunications company may recover its actual costs.

C. As used in this section:

(1) "actual costs" includes all capital and non-capital costs, not otherwise recoverable, incurred to relocate infrastructure or facilities, as well as all costs incurred to remove any infrastructure or facilities, up to a maximum amount in any twelve-month period of one million dollars ($1,000,000); "actual costs" does not include the cost of upgrading the facility being relocated; and

(2) "infrastructure or facilities" includes infrastructure or facilities used to provide interstate and intrastate services, including regulated, unregulated and deregulated services."

**SECTION 2.** APPLICABILITY.--The provisions of this act apply to costs incurred after July 1, 2011 to relocate infrastructure or facilities as well as all costs incurred after July 1, 2011 to remove any infrastructure or facilities.

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**SECTION 3.** EFFECTIVE DATE.--The effective date of the provisions of this act is July 1, 2011.



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SENATE BILL

**50TH LEGISLATURE - STATE OF NEW MEXICO - FIRST SESSION, 2011**

INTRODUCED BY

DISCUSSION DRAFT

AN ACT

RELATING TO TELECOMMUNICATIONS; PROVIDING THAT CERTAIN RETAIL TELECOMMUNICATIONS RATES MAY BE REMOVED FROM THE PUBLIC REGULATION COMMISSION JURISDICTION DUE TO EFFECTIVE COMPETITION.

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF NEW MEXICO:

**SECTION 1.** Section 63-9A-8 NMSA 1978 (being Laws 1985, Chapter 242, Section 8, as amended) is amended to read:

"63-9A-8. REGULATION OF RATES AND CHARGES.--

A. In accordance with the policy established in the New Mexico Telecommunications Act, the commission shall, by its own motion or upon petition by any interested party, hold hearings to determine if any public telecommunications service is subject to effective competition in the relevant market area, which may include a local exchange area or combination of

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local exchange areas or the telecommunications company's service territory. When the commission has made a determination that a service or part of a service is subject to effective competition, the commission shall, consistent with Section 63-9A-9 NMSA 1978 and the purposes of the New Mexico Telecommunications Act, [~~modify, reduce or~~] eliminate rules, regulations and other requirements applicable to the provision of such service, including the fixing and determining of specific rates, tariffs or fares for the service. The commission's action may include the detariffing of service or the establishment of minimum rates [~~which will~~] that cover the incremental costs for the service. Such modification shall be consistent with the maintenance of the availability of access to local exchange service at affordable rates and comparable message [~~telecommunication~~] telecommunications service rates, as established by the commission, for comparable markets or market areas, except that volume discounts or other discounts based on reasonable business purposes shall be permitted. Upon petition or request of an affected telecommunications company, the commission, upon a finding that the requirements of [~~Subsection~~] Subsections B and C of this section are met, shall [~~modify~~] eliminate the same or similar regulatory requirements for those providers of comparable public telecommunications services, including interchange carriers and competitive local exchange carriers, in the same relevant markets so that there

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shall be parity of regulatory standards and requirements for all such providers. The commission shall issue its final order on such petition or request within one hundred twenty days from the petition or request date.

B. [~~In determining whether~~] The commission shall determine that a service is subject to effective competition [~~the commission shall consider the following:~~

~~(1) the extent to which services are reasonably available from alternate providers in the relevant market area;~~

~~(2) the ability of alternate providers to make functionally equivalent or substitute services readily available at competitive rates, terms and conditions; and~~

~~(3) existing economic or regulatory barriers~~] upon a determination that:

(1) a comparable service or facility is available from a supplier other than an incumbent telecommunications company in the relevant market area being considered by the commission; and

(2) market forces in that market are sufficient to assure just and reasonable rates without regulation.

C. When considering whether conditions provided in Subsection B of this section have been met in the relevant market area the commission shall rely on evidence concerning

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the presence or absence of the following:

(1) wireless communications services;

(2) cable telephony services;

(3) voice over internet protocol services; and

(4) the extent to which the incumbent telecommunications company has lost switched access lines to other providers.

D. A carrier that is currently regulated under an alternative form of regulation plan shall continue to be subject to the terms and conditions of that plan. However, upon a finding of effective competition by the commission, the commission shall review any existing alternative form of regulation plans to ensure that those plans are consistent with the finding of effective competition. The commission's review and determination shall be completed within sixty days of the commission's finding of effective competition.

E. If, pursuant to Subsection A of this section, effective competition is found to be present in relevant markets that account for over fifty percent of the retail switched access lines served by the affected telecommunications company, the elimination of the regulatory requirements shall apply to the company's entire service area. The affected telecommunications company shall be required to charge the same basic local exchange rates and apply the same service quality performance plans for intrastate retail services across the

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company's entire service area.

[~~C.~~] F. No provider of public telecommunications service may use current revenues earned or expenses incurred in conjunction with any noncompetitive service to subsidize competitive public telecommunications services. In order to avoid cross-subsidization of competitive services by noncompetitive telecommunications services, prices or rates charged for a competitive telecommunications service shall cover the cost for the provision of the service. In any proceeding held pursuant to this section, the party [~~providing~~] claiming that the service is priced below incremental costs shall bear the burden of proving that the prices charged for competitive telecommunications services do not cover [~~cost~~] incremental costs and violate antitrust or predatory pricing laws.

[~~D.~~] G. The commission may, upon its own motion or on the petition of an interested party and after notice to all interested parties and customers and a hearing, reclassify any service previously determined to be a competitive telecommunications service if after a hearing the commission finds that a service is not subject to effective competition."



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