

**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.

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