

JOINT INTERIM COMMITTEE ON ENERGY
U of A Research and Technology Park – Genesis Technology Building, AT&T Room
700 W. Research Center Boulevard
Fayetteville, Arkansas
Monday, December 16, 2013

The Joint Interim Committee on Energy met Monday, December 16, 2013, at the University of Arkansas Research and Technology Park – Genesis Technology Building, at 1:00 p.m., Fayetteville, Arkansas.

Committee members present: Representatives David Branscum, Chair; Denny Altes, Vice Chair; and Dan Douglas.

Alternate members present: Representatives Bob Ballinger, Mark McElroy, John Hutchison, and Sue Scott.

Also attending: Representatives Jonathan Barnett, Mary Broadaway, Jim Dotson, Charlene Fite, David Kizzia, Kelley Linck, Stephen Meeks, and David Whitaker.

Representative Branscum called the meeting to order.

CONSIDERATION TO APPROVE THE NOVEMBER 19, 2013, AND NOVEMBER 20, 2013, MEETING MINUTES [EXHIBITS C1 and C2]

Representative Altes made a motion to approve the November 19, 2013, and November 20, 2013, meeting minutes, and without objection, the motion carried.

Dr. G. David Gearhart, Chancellor, University of Arkansas at Fayetteville (UAF), was recognized. He stated UAF has approximately 25,400 students, is the fastest growing university in the state, and the 13th fastest growing university in the United States.

He stated UAF hosts 36 affiliate companies at the Research and Technology Park. This venture generates over \$51 million in economic development activity for the state. The affiliates include the National Center for Reliable Electric Power Transmission, The Arkansas Power and Electronics International, and Silicon Solar Solutions.

Dr. John English, Dean of the College of Engineering, was recognized and stated UAF is highly dependent on their research enterprise. Of their \$55 million operating budget, roughly half comes from the research enterprise. UAF Research and Technology Park is responsible for creation of new technology, and is one of the best in the country in power electronics.

Dr. Alan Mantooth, Distinguished Professor, Electrical Engineering, stated the Research and Technology Park produces a unique setting where there are university laboratories sitting across the parking lot from companies that are trying to build-up their enterprise. These are companies as small as two people in one room and as large as 40-50 people in two buildings in various stages of growth. These are all companies that are emerging out of different technology fields from healthcare, electronics, and environmental.

Dr. Mantooth introduced two former UAF students who have established their own companies: Dr. Douglas Hutchings, CEO of Silicon Solar Solutions and Dr. Tye McNutt, Business Development Manager for Arkansas Power Electronics. He also recognized Mr. Phil Stafford, President, Arkansas Research and Technology.

Dr. Mantooth showed a brief video and PowerPoint presentation concerning the [PowerPoint Presentation #1] National Center for Reliable Electric Power Transmission (NCREPT). He stated in 2005 the UAF began bringing together faculty members working on their research. NCREPT is the highest power test facility in any United States university. It allows UAF to create innovative power electronics technology, starting from the basic materials and going all the way through commercialization.

Arkansas Power Electronics with additional contributions from the U of A designed a plug-in hybrid electrical vehicle charger for Toyota, which is seven times smaller with five times the power of the current system. It is being considered for use in Toyota vehicles beginning in 2018. Some of the other advanced electronic projects focus on improved power grid technology, energy exploration, and space research.

Dr. Mantooth noted the following constituent centers are under NCREPT:

- Grid-Connected Advanced Power Electronic Systems (GRAPES) - - member-based center where industry partners pay a \$40,000 a year license fee to be a member, sit on the industrial advisory board, and help direct the research to the most relevant topics.
- Vertically Integrated Center for Transformative Energy Research (VICTER) - - 17-20 faculty members from Arkansas State, UALR, UAPB and the UAF focused on photovoltaic materials and packaging them into solar panels so that the advanced coating helps them resist dust and maintain cleanliness.
- Arkansas Center for Green Renewable Energy Efficiency with Nanoplasmonic Solar Cells (GREEN) - - includes UAPB, UALR, U of A Fort Smith, Philander Smith College, University of Central Arkansas and Arkansas State University and has an outreach program geared to high school students educating them on workforce opportunities in the energy field.
- Harsh Environment Electronics for Electrified Transportation (HEEET) - - a center in the pre-proposal stage to deal with live temperature, vibration, corrosive environment and high humidity. UAF plans to work with companies such as Slumber J Oil Company, Halliburton for deep well drilling, NASA, and the automobile industry. The HEET partnership comprises some of the world's leading authorities such as the University of Illinois, University of Illinois at Urbana-Champaign, Clemson University, The University of Texas at San Antonio, and University of South Carolina.

The committee toured Arkansas Power Electronics, National Center for Reliable Electric Power Transmission, and Silicon Solar Solutions.

PLAINS & EASTERN CLEAN LINE PROJECT UPDATE

[PowerPoint Presentation #2]

Clean Line Energy is developing a series of transmission lines that will deliver thousands of megawatts of renewable power from the windiest areas of the United States to communities and cities that have a strong demand for clean, reliable energy but lack access to clean energy resources. Clean Line will sell transmission capacity to renewable energy generators and to the buyers of the power from these wind energy projects.

Mr. Mario Hurtado, Executive Director, stated Plains and Eastern Clean Line is approximately a 700-mile electric transmission project that would interconnect wind resources in the Oklahoma panhandle with the mid-south and southeast. This is an approximately \$2 billion project they have been working on for over four years.

Mr. Wayne Galli, Executive Vice President-Development, Clean Line Energy Partners, was recognized. He stated high voltage direct current (HVDC) is the most efficient method to transmit large amounts of electricity over long distances due to lower cost, improved reliability, and a smaller footprint. He stated there are many challenges in selecting appropriate routes and developing a project. Clean Line is currently looking at two locations --Pope and White counties. Clean Line would be interconnecting with Entergy.

Ms. Kim Randle, Manager, Clean Line Partners, stated the company's \$2 billion investment will spur approximately an additional \$7 billion in new wind farm development, which will help growth in supply chains for the wind sector as well as demands for clean energy jobs. She stated In December 2012, Clean Line started its federal environmental review. They anticipate mid to late 2014 the Department of Energy (DOE) will issue a draft environmental impact statement, and at that time the project will undergo another series of stakeholder meetings across the footprint of the

project as well as another formal comment period. Clean Line anticipates that the DOE will identify a preferred option, shrinking from about 1 mile wide to approximately 1000 feet. It is anticipated that in 2015, DOE will issue a final environmental impact statement. 2015-2016 will be finalizing commercial commitments and negotiating the right-of-way. There is approximately a 2-3 year construction period, and Clean Line hopes to energize the line in 2018.

Plains & Eastern Clean Line will result in significant economic benefits to Arkansas in the following ways:

- Increased market competition benefits electricity consumers
- Hundreds of construction jobs
- More than 15 wind energy supply chain companies located in Arkansas
- Millions in annual revenues to support local communities

Mr. Josh Katzman, Product Manager, General Cable, was recognized and stated General Cable is a Fortune 500 Company dedicated to designing, manufacturing, and selling wire and cable products worldwide for key applications such as energy delivery, power generation, communications, specialty markets, and renewables. The Malvern plant manufactures overhead transmission conductors, medium voltage cables and underground medium voltage cable which allows wind farms to take energy out into the grid and then to the overhead conductor. Clean Line has partnered with the Malvern facility for sourcing all 700 miles of the conductor.

There being no further business, the meeting adjourned at 4:35 p.m.