MINUTES
ARKANSAS ALTERNATIVE ENERGY COMMISSION
[Established by ACT 1301 of 2009]
State Capitol, Room 171, Little Rock, Arkansas
Thursday, February 2, 2012

The Arkansas Alternative Energy Commission (AAEC) met Thursday, February 2, 2012, at 10:00 a.m. in Room 171 of the State Capitol in Little Rock, Arkansas.

Commission members present: Leo Hauser, Chairman; Warren Allen, Stanley Baker (via phone), Kurt Castleberry, Jessica DeLoach, George Heintzen, Laura Humphrey, Mikel Lolley, Debbie Moreland, Mike Pinkett, and Rita Potts.

Also attending: Senator David Wyatt and Representatives Sheilla Lampkin and Marshall Wright.

Mr. Hauser called the meeting to order.

CONSIDERATION TO APPROVE DECEMBER 15, 2011, MINUTES [EXHIBIT B]

Mr. Heitzen made a motion to approve the December 15, 2011, meeting minutes. Mr. Allen seconded the motion, and the motion carried.

REPORT ON STATE ENERGY PLAN (SEP), Commissioners Hauser and Lolley. Mr. Hauser said he and Mr. Lolley have begun attending a series of meetings with the governor and interested stakeholders regarding development of a SEP. Mr. Hauser said the governor sees three primary areas relative to a SEP: economic development, environmental balance, and security. Marc Harrison in the governor's office is a key contact person.

UNIVERSITY OF ARKANSAS AT LITTLE ROCK'S INSTITUTE FOR ECONOMIC ADVANCEMENT (UALR-IEA) - DRAFT QUESTIONNAIRE FOR ARKANSAS ECONOMIC DEVELOPMENT COMMISSION'S (AEDC) WORK ON STATE'S STRATEGIC ENERGY PLAN [EXHIBIT D]

Mr. Chris Benson, Energy Policy Advisor, AEDC, said the UALR-IEA will mail the survey to 100+ stakeholders, including the commission, and responses can be made by hard copy or online. Mr. Hauser will serve as the point of contact for the commission. Mr. Benson said the Energy Office prefers for the commission to return one survey that represents one view from the commission. Ms. Moreland noted the survey does not provide a category for agriculture. Mr. Benson said agriculture is an important aspect of the SEP, and responses pertaining to the industry can be noted in the "other" category.

2012 MEETINGS [REVISED HANDOUT C]

Mr. Hauser suggested coordinating meeting dates, topics, speakers, and noting which commissioners will recruit presenters. Mr. Lolley suggested starting with Energy Efficiency and combining Renewable Energy Plan with Renewable Energy Portfolio Standards. Mr. Hauser suggested adding "Education" as a topic to 12-15-11 Revised Handout C, and getting informed on how the Department of Higher Education is preparing students for the world of alternative energy. Commissioners agreed to add this topic.

Ms. Moreland made a motion to coordinate topics with meeting dates listed by the chairman and to leave November 15, 2012, open for an additional topic or continuance of another. Mr. Castleberry seconded the motion, and the motion carried.

2012 meeting dates, topics, and speaker recruitment were coordinated as follows:

- April 19 - Energy Efficiency Plan; Mr. Hauser and Mr. Lolley
- June 21 - Renewable Energy Plan/Renewable Energy Portfolio Standards; Mr. Allen and Ms. Moreland
- August 16 - Natural Gas Utilization; Mr. Heintzen
- October 18 - Education; Mr. Hauser and Ms. DeLoach
- November 15 - Open

BIOENERGY OPPORTUNITIES IN ARKANSAS

Mr. Jim Wimberly, President, BioEnergy Systems, LLC, provided a PowerPoint presentation entitled, "BioEnergy Options & Opportunities in Arkansas", **[ATTACHMENT 1]** and said the forestry industry has made Arkansas a robust bioenergy state for years, but efforts to pursue in-state bioenergy industries have remained in the shadows. Bioenergy is the only form of renewable energy that can provide energy in solid, liquid, or gaseous forms.

Bioenergy is essentially solar energy because plants convert atmospheric carbon into plant biomass through photosynthesis. It is unique because it comes into play at the nexus of three important industries: agriculture/forestry, energy production/product sales, and economics/business. Environmental considerations and all-encompassing public policies make the industry even more complex.

There are many investment opportunities for Arkansas in the biomass industry:

- Potential energy contribution - Arkansas has enough biomass resources to produce hundreds of millions of gallons and hundreds of megawatts of power.
- Economic benefits - Biomass energy production in Arkansas would create thousands of jobs at every level.
- Homegrown fuel - If Arkansas used biomass to produce and derive fuel, a percentage of imported fuel would be displaced and those dollars would stay in state.

Commercial scale bioenergy options face logistical challenges, such as coordinating the pathway of feedstocks to the boiler. Mr. Wimberly noted that without market interventions or subsidies, bioenergy products (and all forms of alternative energy) are not cost-competitive with petroleum products at this time, but that will change because cost-reducing technologies are in play. Mr. Wimberly said understanding bioenergy terminology is important when making decisions to set public policy:

Feedstocks – Material derived from plants or animals that is used to produce energy; examples include woody biomass (trees, in-forest residue); ag-field residue (rice stubble, wheat straw, corn stover); dedicated energy crops (switchgrass, fast-growing trees); and chicken litter.

Supply Chain – Producing, harvesting, storing, processing, and transporting feedstocks (a critical part of every bioenergy enterprise). Mr. Wimberly noted that Arkansas has the ability to develop supply chains that would put the state at a competitive advantage.

Biofuels – Liquid transportation fuels produced from biomass; examples include drop-in fuels (a molecularly-equivalent product to gasoline, diesel, or jet fuel that is made from biomass and can be used in any type of engine); renewable diesel (diesel produced from cellulosic feedstocks rather than oil-derived feedstocks); and cellulosic ethanol.

Biopower – Electricity produced from biomass; types of biopower facilities include stand-alone power plant (only purpose is to generate electricity); co-firing power plant (co-fires a percentage of biomass with solid fuel already being used); combined heat and power (CHP) (generates electrical or thermal products); and co-gen plants (co-generates thermal and electrical energy using its own residuals).

One megawatt (MW) – One million watts; one megawatt hour (MHR) – one megawatt for one hour.

Capacity Factor – The percentage of time that a plant operates.

Important conversion terms: Biochemical, fermentation, anaerobic digestion, thermochemical, gasification, and pyrolysis.

Renewable Fuel Standard Version 2 (RFS2) – The primary biofuel industry-driving mandate, established in 1997 and revised in 2010, that requires a certain amount of biofuels to be produced in the U.S., or the refining industry will suffer. Mr. Wimberly said more biorefineries must be built to meet this mandate, and the facilities will be developed in the heart of feedstock-supply areas. Dense forests and the delta region make Arkansas well-positioned to attract more biorefineries. Arkansas competes to attract these industries and every surrounding state already has at least one

biorefinery in operation or under construction. Mr. Wimberly said Arkansas needs a package that promotes in-state feedstock availability and supply chains; and a government "go-to point" that reduces effort and expenses for project developers. The first step to creating an attractive package is to update the biomass resource assessment. The Arkansas Energy Office has underwritten two assessments in 1995 and 2005. Arkansas State University and the University of Arkansas have pilot programs to gather this information, but more data is needed.

There are four coal-fired power plants in Arkansas with a total installed capacity of 4,600 MW. Arkansas' power plants produce 33.5 billion MWH per year using 1,200 trainloads of coal. Mr. Wimberly said if coal input was reduced by 2% with co-firing homegrown fuel from biomass, approximately 100 MW of power could be produced and out-of-state coal consumption would be reduced by almost 25 trainloads. The value of the displaced fuel would be about $35 million per year and would create approximately 200 jobs.

Mr. Wimberly encouraged the commission to instigate an assessment of co-firing activities in the state and said this will only happen with funding, effort, and cooperation from utilities. He suggested considering a comprehensive pilot renewable energy program. Permitting is a critical issue that must be well coordinated with agencies such as the Public Service Commission and the Arkansas Department of Environmental Quality.

Combined Heat and Char (CHC) – A pyrolitic process that makes heat to displace propane and produces a combination of ash and carbon called biochar. There is interest in biochar use, particularly with poultry growers. Poultry litter is an ideal biomass to be used in the CHC because propane is displaced by thermal energy. Propane is the largest expense for poultry producers. Mr. Wimberly said universities in Arkansas have pilot programs to study CHC in place. He encouraged leaders to leverage state investments as matching funds to make the schools' proposals for grant money more attractive. He noted Dr. Mark Cochran at the University of Arkansas as a contact.

Mr. Wimberly said he sent an open letter (e-mail) to Chris Benson and copied Mr. Hauser that suggested areas of focus for bioenergy opportunities in Arkansas. Mr. Benson told him discussions will soon take place that address the level of detail needed to develop a plan for recruiting bioenergy industries. Mr. Wimberly said he is prepared to provide whatever level of detail is needed and usable to move forward.

Mr. Wimberly encouraged the commission to summarize and characterize potential economic benefits of bioenergy investments for Arkansas; identify one or two potential barriers (needed for a resource assessment); and encourage the legislature to fund an updated biomass resource assessment. State-level feedstock assessments cost between $50,000 and $250,000, depending on the amount of detail in the report. Mr. Allen said the biomass resource assessment should be parallel with a harvesting and transportation assessment, and Mr. Wimberly agreed.

With no further business, the meeting adjourned at 12:15 P.M.

REVISED HANDOUT C

The following topics are offered for consideration by the Arkansas Alternative Energy Commission as subject matter for 2012 studies:

Renewable Energy Plan The plan should support the generation of alternative energy through utilization of renewable energy sources. The sources of energy, including alternative energy, should represent fuels that are reliable, available and affordable with regards to power generation. Co-generation should be a major consideration when choosing fuels and generating facility sites. Issues appearing on the "issues list" include items 9,11,22 and 23.

Renewable Energy Portfolio Standards The study of renewable energy portfolio standards should keenly focus on the successes and failures of other states that have already implemented such standards, and examine this information against REFIT actions taken by other states. Item 13 is included under this heading from the "issues list".

Energy Efficiency Plan The study of an energy efficiency plan should include the efficient utilization and generation of energy. The effective generation of energy is often left out of energy plans but is a key part of the equation of reducing the demand on fuels. The plan should also support the Governor's current energy objectives. Issus falling under this heading include items 1,3,5,6,8,10,14,15,1617,18,19,20 and 21.

Natural Gas Utilization Use of natural gas should be studied with uses including vehicles and commercial and industrial facilities. Natural gas is a clean burning and efficient fuel. Natural gas is also currently a cost competitive fuel especially when assuming utilization by a new generating facility. The study should focus on the long term availability of this fuel source.

Education [added topic @ 2-2-2012 meeting]

This information has been compiled for the utilization by the Arkansas Alternative Energy Commission AAEC Issues Committee.

Revised 12/15/11; 2/2/12