

Arkansas Alternative Energy Commission-Final Edits for 2016 Report

December 8, 2016

- 1. Read Edit and Approve Study Presentation Summaries**
- 2. Finalize recommendations for this years reports**
- 3. Suggestions for approaching the new administration of the 91st General Assembly**

October 22, 2015 – Impact of Current Regulations on Electrical Generating Facilities, Andrew Lachowsky, Commissioner, Arkansas Alternative Energy Commission (see appendices GG)

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November 19, 2015 – Integrated Building Technologies, David Dodge, Arkansas Alternative Energy Commission (see appendices HH)

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December 10, 2015 – Hydroelectric Power Generation, Gene Higginbotham, Director, Arkansas Waterways Commission), (see appendices II)

[Powerpoint Presentation #1] Mr. Higginbotham was recognized and gave an overview of hydroelectric power generation, noting hydroelectric power is electricity produced by machines that are run by moving water. The commission's mission is to promote and protect navigation on the state's five commercially navigable rivers: Arkansas, Mississippi, Ouachita, Red and White. There are six hydropower plants on the McClellan-Kerr Arkansas River Navigation System run by North Little Rock, the electric cooperatives, and the US Army Corps of Engineers. Of the 13 lock and dams in the state, six provide hydropower. Much of the hydropower produced in the state remains in the state.

December 10, 2015 – Update on Arkansas Public Service Commission Initiatives, John Bethel, Executive Director, Arkansas Public Service Commission, (see appendices JJ)

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December 10, 2015 – Review of Arkansas Energy Office Plans, Mitchell Simpson, Director, Arkansas Energy Office (AEO), Arkansas Economic Development Commission, (see appendices KK)

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February 18, 2016 – Examples of Alternative Energy Concepts and Projects in Arkansas, Stuart Spencer, Director of the Air Quality, Arkansas Department Environmental Quality (ADEQ) (see appendices LL)

Mr. Stuart Spencer, Deputy Director of Air Quality, [Handout #1] Arkansas Department of Environmental Quality, was recognized and presented an overview of alternative energy concepts and projects in the state. He explained the benefits of using on-site combined heat and power (CHP) from steam or hot water as an alternative energy source compared to conventional electricity and thermal energy production. Mr. Stuart explained the benefits of using biomass fuel as another alternative energy source. He said burning biomass reduces overall carbon in the atmosphere. Many of the biomass fuels used today are wood products, dried vegetation, and crop residues. Mr. Stuart listed several CHP facilities and biomass-fueled electricity generators currently operating in the state. Mr. Stuart's handout also listed utility companies in the state

which have entered into either a solar or wind project agreement with companies from other states.

February 18, 2016 – Input on Alternative Energy with Respect to Their Individual Positions/Offices

Ms. Tori Gordon, Policy Advisor to the Governor, was recognized and acknowledged the Governor's support and appreciation to each Commission member's commitment to serve and study the economic development of creating and expanding alternative energy sources in the state. Ms. Gordon expounded on several Arkansas code provisions that allow utility companies to explore and acquire clean energy resources. In addition to overall exploration, investment opportunities, and alternative energy, Ms. Gordon conveyed the Governor's requests that the Commission develop strategies and make recommendations to fund the conversion of state-owned vehicles to compressed natural gas (CNG) fuel or another alternative fuel source. Ms. Gordon stated the Governor is willing to issue a directive to the Department of Finance and Administration to determine a practical number or percentage of vehicles that can be converted in a reasonable timeframe. Ms. House requested the Governor consider additional funding to maintain the state's existing hydropower facilities, and she also asked for funding consideration for the AAEC to be able to bring in expert speakers from out of state. The Commission does not have any funding.

Representative Bob Ballinger, House Co-Chairman, Joint Energy Committee, was recognized and discussed his thoughts on the state and renewable energy: • What is the economic impact for the citizens of Arkansas? • What is the environmental impact on the state? • Can utility companies in Arkansas maintain base load capacity for customer demand? Representative Ballinger asked the Commission to find areas where government policies may be in the way of innovation. He stated the Joint Energy Committee supports the Commission's work and is open to hear the Commission's recommendations. When asked about the Clean Line transmission issue, Representative Ballinger explained the Joint Energy Committee sent a letter to the Department of Energy expressing this is an Arkansas property rights issue and should not be dealt with at the federal level.

DISCUSSION OF LESSONS LEARNED FROM PRESENTERS Ms. House suggested looking at the Commission's CNG Energy report findings from the previous years and how to bridge the gap between government entities and innovators. Ms. Sabin suggested the Commission focus on a particular alternative energy source as an overall energy plan. Mr. Nabholz suggested the Commission focus on the Governor's CNG requests and look at impediments to clean energy.

DISCUSSION REGARDING TOPICS FOR NEXT MEETING Mr. Lachowsky suggested including data on electric vehicles as an alternative source. Mr. Nabholz suggested inviting a presenter from the state fleet service to talk about the number of state vehicles purchase each year, location of these vehicles, and total number of state vehicles. Also find out when CNG vehicles can be ordered from U.S. manufacturers, and look at sites in the state where CNG fueling stations are located. Mr. Nabholz suggested also looking at impediments to the state's hydroelectric and see if anything needs to be changed. Ms. Sabin suggested looking at other states alternative energy plan and what the future of alternative energy is in the state. She will contact former Commissioner Lolley to speak on electric cars. Ms. House suggested impediments of policy on renewables, CNG transport funding strategy, mitigation of future policy, and possibility of new transport innovations such as rail for public transportation. Mr. Crabbe suggested requesting the Arkansas Department of Finance and Administration to provide a financial impact on the cost of converting state vehicles to CNG. He will speak to the Governor's office about finding a presenter from Oklahoma to speak on CNG conversion and who is the best contact person to speak about the state's fleet service. Mr. Krug will contact a Conway car dealership regarding converting vehicles to CNG; Michael Gallop, Transportation Manager at SWN; and Mitchell Simpson at the Energy office may have cost analysis on the volatility of CNG versus unleaded fuel. Mr. Dodge suggested the Commission look at utilizing resources available in the state to hold cost down rather than import resources from other states.

June 16, 2016 – Future Sunset Clause of AAEC, Mr. Michael Feehan,
Legislative Attorney, Bureau of Legislative Research

Act 2 of the Third Extraordinary Session created a *sunset date for the AAEC of September 30, 2017*. The Speaker and Pro Tempore appointees' terms will end December 31, 2016. Due to the

fact that it will be a new General Assembly in January 2017, those positions will be up for appointment. The Arkansas General Assembly uses Mason's Manual of Legislative Procedure, which provides the quorum follows actual membership. The commission can keep functioning even if legislative-appointed members are not reappointed, as long as all the gubernatorial appointees are present at every meeting. The sunset dates are always set after the next regular session which allows the General Assembly time to reconsider the expiration dates. After discussion, Mr. Allen stated the AAEC would like to continue and work to change the sunset date. He noted the AAEC needs to justify its accomplishments and look at December 2016 as the report date for the 2015-2016 commission. He also mentioned that the commissioners need to contact their respective legislative appointers and let them know if you would like to be re-appointed. Ms. House made a motion to continue the AAEC and have a bill to strike the sunset date. Mr. Caspary seconded the motion and the motion carried. AAEC STRATEGIC DIRECTION PER ACT 2 Commissioners will contact legislators regarding background on establishing the expiration date. Ms. Sabin will speak with Senators Rice and Irvin. Ms. House will speak with Representative Gossage, and Mr. Berry will speak with Representative Branscum and Senator Rice. Ms. House and Ms. Sabin will draft a document highlighting the commission's benefits and accomplishments.

REVIEW OF AAEC MEETING RESEARCH SUBJECTS Mr. Allen reviewed commission activities since October 2015: • October 22, 2015 – Andrew Lachowsky - Overview of Clean Power Plan • November 19, 2015 o Attorney General Leslie Rutledge discussed consumer advocacy and two bio-mass projects, one in Monticello and the other in Pine Bluff. o David Dodge discussed energy conservation. • December 10, 2015 o Mr. Gene Higginbotham, Director, Arkansas Waterways, explained the usage and importance of hydropower in Arkansas. o Mr. John Bethel, Director, Arkansas Public Service Commission, referenced energy efficiency programs in Arkansas. o Mr. Mitchell Simpson, Director, Arkansas Energy Office, discussed Arkansas Energy Office Programs. • February 18, 2016 o Ms. Tori Gordon, Policy Advisor to the Governor, conveyed the Governor's requests regarding advocacy in usage of compressed natural gas (CNG) and to make recommendations for funding the conversion of state-owned fleet vehicles. o Mr. Stuart Spencer, Deputy Director of Air Quality, Arkansas Department of Environmental Quality, presented an overview of combined heat and power as well as biomass.

DISCUSSION OF SUBJECTS FOR RESEARCH Ms. House explained she does not consider CNG a good alternative. Conservation and efficiency are a better approach. Ms. Sabin would like to hear from someone who can discuss different alternative energy trends across the United States and compare the good with the bad. She would also like to learn more about distributed generation. Mr. Dodge mentioned that solar energy is a viable source and when combined with other sources it enhances efficiency. He will make some contacts for additional information.

NEXT MEETING DATES The commission will meet: July 28, August 25, September 29, October 27, and December 8, 2016.

OPEN DISCUSSION FROM COMMISSIONERS AND PUBLIC ATTENDEES Mr. John Bethel, Director, Public Service Commission, mentioned that the utilities have filed their three-year energy efficiency programs; therefore the review process is underway. The PSC is also assessing distributed generation to decide if there is a need for policy or legislative changes. Mr. Bobby Ampezon, Reporter/Editor, Arkansas Public Media, KUAR of University of Arkansas in Little Rock, KASU of Jonesboro, KUAF of Fayetteville, explained they are a voice for journalism with a goal to cover energy from every corner such as, energy sourcing, coal, nuclear, hydro, energy policy, as well as state aid for low income consumers. Ms. Potts suggested meeting with the Arkansas Recycling Coalition. She will make an inquiry for contacts and information.

July 28, 2016 – Arkansas Real Clean Energy Economy, Frank Kelly, Solar Source Consulting, (see appendices MM)

[Powerpoint Presentation] Presented a brief history of renewable energy policies in Arkansas. Mr. Kelly stated that less than 0.01% of energy generation in Arkansas is produced from solar and wind systems; however, there is enough sunlight striking the Earth every 104 minutes to power the entire world for a year. The United States has the space and sunlight to provide 100 times its annual power demand by harvesting solar energy. The installation process is much less destructive and time consuming than fossil fuels. The cost of installing solar panels has dropped 70% since 1998. Investors can benefit from distributed solar generation by installing solar panels on rooftops and farms. This power is readily consumed and solar installations can create shade to

lower the cooling load. A parking lot solar canopy, able to withstand 90 mile an hour winds, is the most expensive type of installation at approximately \$4 a watt. For residential locations on a foundation the cost drops to about \$3.20 per watt. The least expensive method is to build at ground level; which would drop the cost to around \$2.00 per watt. The federal government offers a 30% tax credit for investing in solar energy. There are currently only 476 installs in Arkansas, while solar is booming in other states. Arkansas needs more policy incentives to stimulate solar generation; however, this has been met with resistance. The Rural Energy for America Program, currently on hold, was mainly for farming businesses, but less than 4 installations qualified for the program in Arkansas. The payback on a 3,000 square foot residential home, with the current reduction in installation cost compared to the negotiated rate in net-metering, is about 11-12 years. If you would like to see a solar facility or get a quote for installation you can go to www.arkansas.solar.

July 28, 2016 – State Fleet Management, Jake Bleed, Office of Administrative Services, Arkansas Department of Finance and Administration, (see appendices NN)

Mr. Jake Bleed explained that Arkansas does not have a centralized fleet maintenance system, instead each agency has its own fleet management system. The state fleet consists of about 9,000 vehicles, as follows: [Powerpoint Presentation] • Department of Highways and Transportation own 2,469 vehicles • Arkansas Game and Fish Commission own 567 vehicles • Institutions of Higher Education own 1,524 vehicles • Department of Finance and Administration own 4,888 vehicles Approved 8/25/16 Each agency is responsible for the maintenance and operation of their vehicles and reports monthly to DFA. DFA reports annually to the General Assembly on the cost of fuel, insurance, and maintenance incurred by each agency, and oversees the acquisition of all new vehicles and disposal of old vehicles. Arkansas requires a five cent tax on CNG and other alternative fuels on a per-gallon basis. The DFA, Office of State Procurement (OSP), bids on vehicle purchasing contracts on behalf of the state agencies and local government. Approximately 1,000 vehicles are purchased a year. Contracts were sought for the Chevy Volt and Nissan Leaf but were not obtained. DFA also sought contracts for various bi-fuel capable vehicles, and has three contracts at this time. Arkansas Code requires an annual report on the

number of alternative fuel vehicles owned by the state. The definition of alternative fuel used in the statute is borrowed from federal regulations and includes vehicles capable of operating on ethanol. State agencies employ 1,652 vehicles classified as alternative fuel vehicles, the majority of which are E85 capable. Approximately 30 vehicles operate on hybrid electric, biodiesel, or other fuels. There are no CNG capable vehicles identified in the most-recent report. In 2013, the OSP did seek two contracts to install CNG conversion kits to state vehicles. The State did not utilize these contracts and there is no current CNG conversion contract. The prices ranged from \$9,800 - \$14,980 per conversion and the cost would have been incurred by each individual agency. There are only six CNG fueling stations across Arkansas at this time. Mr. Bleed stated he was unaware of other states performing mass conversions or any benefit from doing so to date. In further discussion, he stated better efficiency in the state fleet might be achieved by setting reimbursement rates for vehicle maintenance and through more reporting.

UPDATE ON ARKANSAS ALTERNATIVE ENERGY COMMISSION'S FUTURE SUNSET DATE Ms. House explained that she is still working on the issue. She has contacted Senator Stubblefield and is waiting to hear back from him.

FUTURE MEETING SUBJECTS/SPEAKERS Mr. Dodge noted he has a speaker scheduled for the August 25th meeting and will forward the information in email for the agenda. Mr. Perkins stated he has scheduled the Resource Planning Manager from American Electric Power to speak at the September 29th meeting. Ms. Potts confirmed that she had a speaker lined up for the October 27th meeting.

OTHER BUSINESS Mr. Dodge mentioned that the Arkansas Alternative Energy Commission website is outdated and hinders the ability to recruit speakers. Since the commission is unfunded, he has been in discussion with his company's web design team to possibly review the website and update it accordingly. Ms. House added that she can provide Michael Lolly's contact information as he created the website originally.

August 25, 2016 – Retrofit Metal Roofing and Solar Integration-A Perfect Match, Mr. Ken Gieseke, Vice President of Marketing, McElroy Metal, Inc., [PowerPoint Presentation #1] (see appendices PP) – Building a Better

Tomorrow, Peter Rienks, Innovateus Solar, [PowerPoint Presentation #2] (see appendices QQ)

Mr. Ken Gieseke [PowerPoint Presentation #1] explained how metal roofing and solar photovoltaic panels work together. A metal roof generally lasts 40+ years and is 100% recyclable. It is the best host for solar panels which come with a 25-year warranty. Solar panels clip onto metal roofs without penetrating the metal, therefore preventing leakage. Arkansas has a great climate for solar and is a top 20 state for pre-engineered metal buildings.

Mr. Peter Rienks, Senior Account Executive, Inovateus Solar, [PowerPoint Presentation #2] explained the cost of installing a solar system has decreased significantly and has the lowest facility maintenance cost while easing the grid load by adding a buffer and security. Solar is part of a balanced generating portfolio with nuclear, wind, natural gas, and coal. Mr. Rienks stated Arkansas is ranked 51st, lowest on the solar report card. 29 states have a Renewable Portfolio Standard (RPS), which is a regulatory mandate to increase production of renewable energy on a set time-line. Arkansas does not have an RPS and does not offer incentives for solar generation. A solar panel in Arkansas generates 50% more electricity than a panel in Minnesota, and Minnesota is ranked 7 on the solar report card; therefore an ideal state to investigate policies and incentives.

Mr. Rienks noted the best solar incentives are not the government “writing checks” for solar panels but are in the form of accelerated depreciation, tax incentives, as well as private funding. Obstacles to overcome while trying to expand the solar market are permit costs and utility regulation. The Department of Energy SunShot Initiative is helping reduce permit costs, but the utility companies are threatened by distributed generation, as they want control and resist people generating their own electricity; additionally, net-metering and state-to-state sales of renewables are limited due to regulation.

August 25, 2016 – How to Reduce Carbon Dioxide Pollution, Create Jobs, Grow the Economy, & Improve Health, Robert McAfee, Arkansas Citizens Climate Lobby (CCL), (see appendices OO)

[PowerPoint Presentation #3] Mr. McAfee explained a policy initiative called Revenue-Neutral Carbon Fee and Dividend, saying the plan is fair because every power plant or polluter pays the same amount for carbon dioxide emissions and each year the fee increases. The money would be put into a “carbon bank” and then distributed to each consumer. The purpose is to control and mitigate carbon dioxide pollution from burning fossil fuels. The Arkansas CCL is working with the National Citizens Climate Lobby which has a goal to have Congress pass a carbon-fee and dividend policy by the end of 2017.

Mr. Chris Balos, CCL, stated he is an advocate for carbon-fee and dividend, because he is from the Marshall Islands and has experienced the impact of rising sea levels due to global warming. Ms. Nancy Brown, Semi-retired Psychotherapist and Retired Nurse, CCL, stated climate change has an effect on mental health. People feel overwhelmed and helpless in the global warming solutions. An important benefit to carbon-fee and dividend is helping people feel like they are supported in their efforts to save the planet, and it promotes hope.

Ms. Shelley Buonaiuto, CCL, explained Regional Economic Models, Inc. (REMI) did a study examining the potential economic, demographic, fiscal, and emissions impact of a fee on carbon dioxide emissions in Arkansas. The study focused on two rates. One is based on CCL and their proposed national legislation and the other is based on Clean Power Plan compliance (CPP). [Handout D] • CCL – The fee begins at \$15 per metric ton of carbon dioxide emissions the first year, escalating at \$10 per year through at least the 2030. It ends at \$145 per metric ton in 2030. • CPP – The fee begins at \$30 per metric ton of carbon dioxide emissions the first year, escalating at \$30 per year until it plateaus at \$150 per metric ton in 2021. The main policy incentives are: ♣ Adds 20,000 – 30,000

jobs over the baseline scenario ♣ Increases the gross state product and the real disposable personal income ♣ Reduces emissions by 20 - 30 million metric tons per year ♣ Power emissions approach or are below CPP regulations ♣ \$500 million to \$1 billion revenue in the first year, \$4 billion long-term ♣ Monthly rebates to household and employers over \$200 a month ♣ The long-term population of the state increases with fee ♣ Attracts a stronger labor market and availability of dividends

Ms. Buonaiuto noted at the national level, the fuel companies would pay the fee; at the state level, the utilities would pay the fee, and then pass it on to consumers. National studies show that 66% of consumers would recoup the entire cost spent. Mr. McAfee noted someone will have to pay for the removal of carbon pollution from the atmosphere and the transition from fossil fuels to a cleaner form of energy. Cap and trade policy puts a cap on emissions, where carbon-fee and dividend puts a price on emissions while giving something back to consumers.

UPDATE ON ARKANSAS ALTERNATIVE ENERGY COMMISSION'S FUTURE RELATIVE TO SUNSET DATE

Ms. House stated she spoke with Representative Gossage, and he said he would speak with the governor. She also spoke with Senator Stubblefield, and he will take her bill drafts to the Bureau of Legislative Research to make sure the language is correct. Ms. House drafted an appropriation bill and also spoke with Representative Bennett. State Agencies and Governmental Affairs would be the committees voting on the bill(s).

FUTURE MEETING SUBJECTS Mr. Allen noted that Commissioner Perkins has a speaker for the September 29th meeting, and Commissioner Potts has a speaker scheduled for October 27. He suggested members review past minutes and begin making recommendations for the report. Ms. House asked for help with the report. **OTHER BUSINESS DISCUSSION FROM GUESTS** Mr. Rienks stated that he would follow up with Mr. Dodge on how other states have created their Renewable Portfolio Standard.

September 29, 2016 – American Electric Power -- Southwestern Electric Power Company’s Approach to Renewable Modeling, Scott Fisher, Resource Planning Manager, American Electric Power (AEP), Southwestern Electric Power Company (SWEPCO), (see appendices RR)

Mr. Scott Fisher, Resource Planning Manager, American Electric Power, (AEP), Southwestern Electric Power Company, (SWEPCO), was introduced by Commissioner Greg Perkins and explained that integrated resource planning (IRP) is balancing the needs of a variety of constituents while ensuring safe, reliable and efficient resource selections for the future of energy. The most recent 3-year IRP is available on the PSC’s website. AEP is working to convert its portfolio to more sustainable by transforming the generation fleet and reducing emissions. AEP reduced its reliance on coal by 20% since 2005, and increased natural gas generation by 10%. Emission reductions are:

- Sulfur Dioxide SO₂ – coal fired power plants’ emissions – reduced 88% in the last 25 years.
- Nitric Oxide NO_x – ozone causing gases – reduced 87% in the last 25 years.
- Mercury Hg – coal fired power plants’ emissions - reduced 54% in the last 25 years.
- Carbon Dioxide CO₂ – predominately coal fired power plants – reduced 39% since 2000.

SWEPCO is a unit of AEP and participates in the Southwest Power Pool (SPP) Regional Transmission Organization. SPP is responsible for the reliability of the network and establishes the planning requirements that go into developing an IRP. SWEPCO owns 5,148 megawatts (MW) of capacity made up of coal, gas and lignite as well as 470MW of wind purchase power agreements. Wind generation capacity is high at 40 - 50%. In 2015, wind provided SWEPCO customers about 7% of their energy needs and is much more economical than solar as a renewable. SWEPCO has a request for proposal out for 100MW of wind. The net-metered renewable is owned by the customer and totals about 10MW. The U.S. Congress passed, and then extended in late 2015, the Production Tax Credit (PTC) incentive which provides a \$23/MWh tax credit for investing in a wind project that is completed in 4 years. The PTC will expire in 2019. Transmission is a major component to bringing renewables across Arkansas and the United States. AEP has

14 patents on a transmission tower that is much taller and has a lower impact than the traditional structures. The Clean Power Plan has a 30% carbon intensity reduction target by 2030, and although SWEPCO didn't model it in its IRP, the preferred SWEPCO plan achieves a 29% reduction. [PowerPoint Presentation]

UPDATE ON ARKANSAS ALTERNATIVE ENERGY COMMISSION'S (AAEC) FUTURE RELATIVE TO SUNSET DATE

Ms. Jessica Sabin, AAEC Commissioner, was recognized and stated she and Ms. House have been considering the next step to save the commission or let the sunset date remain. The AAEC's mission statement is to study the needs and impacts of various forms of alternative energy on the economic future of Arkansas. If the commission's intention is to extend the sunset date, the focus needs to be narrowed and a 10-year overview prepared highlighting research and showing what could also be done. Ms. Sabin suggested the commission build upon the last report(s) as well as introduce a handful of good ideas to promote to the legislature for continuance. She added that she is trying to get the AAEC's website updated so all the reports can be accessed.

REVIEW OF SUBJECTS RESEARCHED TO DATE Mr. Paul Love, AAEC Commissioner, was recognized and presented a summary of topics from past meetings. Mr. Love stated that he found three topics which were not pursued: 1. Find out when CNG vehicles can be ordered from U.S. manufacturers. 2. Look at other states' alternative energy plan and what their future holds. 3. Possibility of new transport innovations such as rail for public transportation. Mr. Love concluded the commission needs an expert economist that can add to the research for a more definitive outcome. [Handout #1]

DISCUSSION OF COMMISSION REPORT Mr. Allen stated that he has two bills that Ms. House has worked on with some legislators to exempt the commission's sunset rule and add an appropriation. He encouraged the commission to review the summary, past

minutes, and reports in order to narrow details in the October meeting, and plan for a report being done by the end of this year.

October 27, 2016 – Green and Sustainable in the Future, Don Curran and Cherie O’Mary, Arkansas Recycling Coalition, (see appendices SS)

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December 08, 2016 – “Is it waste or fuel?”, John Warmack, (see appendices TT)

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