



Arkansas Alternative Energy Commission

Second DRAFT Report to

Governor Mike Beebe

Senate President Paul Bookout

House Speaker Robert Moore

(October 29, 2012)

TABLE OF CONTENTS

Alternative Energy Commission.....	3
1) Introduction	
2) Purpose	
3) Acknowledgements	
4) Recent Accomplishments <u>by in Arkansas in Energy Efficiency</u>	
Recommendations from “Initial Report” dated 11-23-2010.....	4
1) Enhanced Net Metering	
2) Feed-in Tariff	
3) “Suggestions for Further Study”	
Background -- How the Commission arrived at “Topics for Consideration”.....	6
1) Energy Efficiency Plan	
2) Renewable Energy Plan	
3) Natural Gas Utilization	
4) Education	
AAEC Studies.....	9
1) Legislative Review by Representative Kathy Webb, July 14, 2011.....	10
2) <u>Progress of State Energy Plan by Chris Benson, Oct. 20, 2011.....</u>	<u>11</u>
3) <u>State Energy Code by Commissioner Lolley, Oct. 20, 2011.....</u>	<u>13</u>
4) Report Subcommittee – “Issues to Address,” Oct. 20, 2011.....	14
5) Arkansas Energy Fact Sheet, Oct. 26, 2011.....	15
6) Handout C – Topics offered for 2012 studies, Dec.15, 2011... ..	15
7) <u>Stakeholder meeting with Governor Beebe, Jan. 13, 2012.....</u>	<u>.....</u>
8) <u>Bio Energy by Jim Wimberly, Feb. 2, 2012.....</u>	<u>.....</u>
9) <u>State Energy Plan Survey - Submitted, Feb. 29, 2012.....</u>	<u>.....</u>
10) <u>Stakeholder Meeting - Attended, May 24, 2012.....</u>	<u>.....</u>
11) <u>Energy Efficiency Day,</u>	<u>.....</u>
AAEC Recommendations.....

Appendices.....

- A) Alternative Energy Commission Membership, 07/06/11
- B) Act 1301 – An act to create the Arkansas Alternative Commission, 03/27/09
- C) Initial Report to Governor Mike Beebe, 11/23/10
- D) 2011 Legislation of Possible Interest to Alternative Energy Commission, 07/14/11
- E) Strategic Energy Planning for Arkansas, Status Report, 10/20/11
- F) Residential State Energy Code Status, Commissioner Lolley, 10/20/11
- G) Arkansas Energy Fact Sheet, 10/26/11
- H) State Energy Plan Stakeholder Meeting, Chairman Hauser and Commissioner Lolley meeting with Governor Mike Beebe, 01/13/12
- D) Report-out on State Energy Plan meeting – Chairman Hauser and Commissioner Lolley
- J) Present UofA at Little Rock’s Institute for Economic Advancement DRAFT Questionnaire “State Energy Plan Survey,” 02/02/12
- K) State Energy Plan Survey, AAEC Response, 02/29/12
- L) Bioenergy Opportunities in Arkansas, Jim Wimberly, Bioenergy Systems, LLC, 02/02/12
- M) Building Codes and Loan Funds, Scott Hamilton, Arkansas Energy Office, 04/19/12
- N) Unencumbered Wealth, Michele Halsell, UofA Sam Walton College, Applied Sustainability Center, 04/19/12
- O) Property Assessed Clean Energy (PACE), Mark Robertson, 04/19/12
- P) DynamicFuels – Conversion of Fats, Oils & Greases Into Fuel, Andy Rojas, Vice President of Renewable Energy, Tyson, 06/21/12
- Q) Energy Alternatives for Arkansas, Ben Thorp, Vice President and Board Chairman, Bioenergy Deployment Consortium (BDC), 06/21/12
- R) Home Energy Performance, The Fifth Fuel, Matt Bell, Viridian, 10/24/12
- S)

The Arkansas Alternative Energy Commission (AAEC) was created by Act 1301 (see appendices A) of the 2009 session of the Arkansas General Assembly for The Commission is comprised of 15 members (see appendices B) representing consumers and utilities, equally appointed by the Governor, Senate President and Speaker of the House.

The AAEC is charged to study:

(1) the feasibility of creating or expanding alternative energy sources in Arkansas.

(2) the effects of the use of alternative energy sources on economic development of the state.

(3) other issues related to alternative energy production and use and the impact of alternative energy that the commission considers appropriate.

The Commissioners wish to express our sincere appreciation to Governor Beebe for identifying the AAEC as a stakeholder in the development of the State Energy Plan over the past year. The Commission wishes to acknowledge recent accomplishments under the leadership of the legislative and executive branches, as well as the tremendous efforts put forth by state agencies for the Arkansas Economic Development Commission, the Arkansas Energy Office and the Public Service Commission relating to the emerging sectors of alternative energy, energy efficiency and renewable energy. The Commission wishes to highlight a few of the more significant accomplishments achieved in Arkansas in the alternative energy sector since our “Initial Report” to the Governor, dated, November 23, 2010:

- Public Service Commission establishes clear guidelines and goals for energy efficiency programs through 2013.
- Creation for the Centers of Excellence at Pulaski Tech and NWA Community College toward retooling the work force in the areas of Energy Efficiency and Renewable Energy.
- Public Service Commission recent ruling striking “indemnity” language from the net metering interconnection contracts between renewable energy producers and the utilities, allowing for public building owners, such as state agencies, counties, municipalities and school districts to legally enter into interconnection contracts without ~~unreasonable liability~~indemnification.
- Arkansas Energy Office grants for energy efficiency and renewable energy projects, start-ups, and economic development in the clean energy/clean tech sectors.

Since our 'Initial Report', dated, November, 23 2010, (see appendices C) the Commission has reexamined the (2) two previous recommendations for Enhanced Net Metering, and a Feed-in Tariff. The Commission recommends for these (2) previous recommendations again:

(Re)Recommend the following:

- **The Commission (re) recommends a revision to the Ark. Code *Ann.* 23-18-603(6)(b) to increase generation capacity to not more than fifty kilowatts (50 kW) for residential use or three hundred kilowatts (300 kW) for any other use.**
- **The Commission (re) recommends the state develop a Feed in Tariff.**

The Commission recognized the need for the review of issues relating to alternative energy, and several such issues were identified and introduced in our 'Initial Report,' dated November 23, 2010, as "**Suggestions for Further Study**":

- Energy efficiency program objectives relating to cost effectiveness for planning and operational purposes. In July-December of 2011-2010, PSC's Ruled for Energy Efficiency Programs to require utilities to document the cost effectiveness of the proposed programs. The cost effectiveness of the programs is a component of the Commission's review of the programs proposed by the utilities. The Commission has provided guidance regarding comprehensiveness and cost effectiveness to the utilities and has ongoing proceedings to continue evaluation of those topics.
- Loading order of efficiency relating to alternative and existing energy sources. The AAEC has learned that Energy Efficiency is not a dispatchable resource that can be "loaded" for the purposes of economic dispatch. However, Energy Efficiency can and does serve to reduce the amounts of capacity and energy that would otherwise be required, but for the presence of the energy efficiency programs and the associated energy savings.

- Balancing energy efficiency with reliability, universality and affordability. Since July-December of 2011-2010, once the guidelines and goals were established, these factors are now currently considered in the PSC's review and approval of utility energy efficiency programs.
- Economic disincentives currently faced by utilities when promoting energy efficiency. Since July-December of 2011-2010, once the guidelines and goals were established, the PSC has addressed this through the energy efficiency cost recovery rider which includes a component to permit the utilities the lost contribution to fixed costs due to declines in usage caused by the energy efficiency programs. This serves as a de-coupling mechanism that directly addresses the disincentive. Further, the Commission has also approved incentives for utilities that meet and exceed the Commission's goals. Therefore, the disincentive issue has been addressed by the PSC.
- Short-term and long term rate recovery mechanisms for participating entities. Since July of 2011-2007, once the PSC established the energy efficiency cost recovery rider, this allowed for each utility that offered energy efficiency programs to also include recovering the program costs, and including the lost contribution to fixed costs and incentive payments. Therefore the recovery mechanisms have been established.
- Coordinating energy efficiency efforts with non-utility efficiency programs. Arkansas has seen the development of many energy efficiency programs such as the American Recovery and Retrofit Act (ARRA-stimulus funds), Qualified Energy Conservation Bonds (QECCB's), Community Development Block Grants (CDBG's) that went toward energy efficiency improvements on municipal buildings, at least one instance of the creation of a municipal revolving loan funds for funding energy efficiency improvements, and the HEAL Arkansas program.
- Existing residential buildings codes for both rural an urban areas. The Arkansas Energy Office (AEO) has been conducting Energy Code Workshops across the

state to educate building professionals about the 2009 IECC that will likely be deployed in the summer of 2013. Arkansas will then join 32 other states with more stringent energy codes but are still lacking allocation of resource for enforcement of the new Standard.

- Manufacturer incentives to encourage adoption of energy efficiency measures. Since July of 2011~~2007~~, a number of energy efficiency programs offered by the utilities specifically target manufactures and other commercial and industrial customers. A number of these larger consumers of energy have participated in these programs.
- Consumer-based incentives, including low-interest revolving loans, rebates and tax incentives. A number of energy efficiency programs approved by the PSC include rebates for energy efficiency measures. The AEO and ADFA are considering a statewide revolving loan fund as an alternative financing mechanism at lower interest rates for borrowers interested in pursuing energy efficiency measures.
 - On-bill Financing as a financial tool for cost-effective energy efficiency.
 - General Disclosure Policies to ensuring that consumers are fully informed as to the source of their power.
- State Interconnection Policy Standards to encourage utility participation and ensure reliable energy resources from alternative and renewable energy producers. There were specific federal interconnection standards adopted through the Public Utilities Regulatory Policy Act of 1978 (PURPA). These were amended in 2002 by the PSC when the rules for net metering were promulgated which set interconnection standards for small non-utility generating facilities in Arkansas.
- Renewable Energy Access policies to examine the rights of both property owners and energy producers in relation to existing provisions of state and local governments, historic districts, and homeowner / property associations.

- Development of a State Energy Plan by 2012, as a basis for Arkansas to effectively participate in the alternative energy marketplace.

The Commission continues to examine a variety of issues relative to Alternative Energy and has knowledge that the State is moving forward to develop a state energy plan. This awareness influenced heavily the Commission's areas of study, concentrating our research and reporting on issues prompted by the State Energy Plan Survey, (see appendices E) for AAEC State Energy Plan Survey AAEC Response, dated February 29), 2012), as well as by expert testimony provided by the Arkansas Public Service Commission, the Arkansas Energy Office, the Arkansas Economic Development Commission, the University of Arkansas Cooperative Extension Service, as well as expert testimony from individuals from throughout the private sector.

The Commission wishes to extend our sincerest gratitude for their expertise in the areas of the emerging sectors for alternative energy, energy efficiency, renewable energy, and including compressed natural gas as an alternative transportation fuel source. We are of the conviction that alternative energy in the right amounts at the right times will assure a more secure energy future, create jobs, retain wealth, attract private investment, create economic development, and provide for a cleaner environment. All segments of our state must work together to educate and make this transition from the business-as-usual economy of the last century, the Clean Energy Economy of this century with Arkansas leading the way.

Background - How the Commission arrived at the "Topics for Consideration?"

The Commission learned from Mr. Chris Benson, Energy Advisor, to the Arkansas Energy Economic Development Commission, that the Governor was pursuing a State Energy Plan (see appendices F). He Mr. Benson stated that, "This plan is not a comprehensive plan, but a loose collection of strategies to guide the State's decisions as it transitions to a sustainable economy." Coincidentally, the Commission had previously identified 24 items as "Issues to Address," and discovered that they fell into four (4)

discrete categories for: Energy Efficiency, Renewable Energy, Transportation, and as they might affect Finance & Budget. The Commission identified these recommendations as our 'Alternative Energy Plan' so as to co-exist with the Governor's State Energy Plan. This 'Alternative Energy Plan' would serve as the overarching umbrella, or main theme that the four (4) sub-categories would fall under. Energy Efficiency was the 1st sub-category identified and studied, given its best least up-front cost, least complexity, which therefore thereby ensuresing the best chance for positive rates of return on investment, and shorter payback. The Commission identified and ranked specific mechanisms or policy pieces for each of the four (4) main sub-categories as follows:

Energy Efficiency:

- 1) Create a Statewide Energy Efficiency Program, such as:
 - Loan Loss Reserve toward leveraging a Revolving Loan Fund
 - PACE – Property Assessed Clean Energy
- 2) Adopt enhanced Arkansas Energy Building Codes
- 3) General Disclosure Policy
- 4) Public Benefits for Energy Efficiency
- 5) Sales Tax Incentives for Energy Efficiency Equipment (this would also fall under the 4th category for Finance/Budget).
- 6) Consumer based incentives such as utility rebates, state and federal tax credits.

Since July of 2011-2007, once the guidelines and goals were established, the PSC approved a number of energy efficiency programs which include rebates for energy efficiency measures.

Renewable Energy:

- 1) Sales Tax Incentives for Renewable Energy Equipment (this would also fall under the 4th category for Finance/Budget).
- 2) State Interconnection Policy Standards -- Promulgated in 2002 by the PSC when the rules for net metering set interconnection standards for small non-utility generating facilities in Arkansas.
- 3) Renewable Energy Access Policies

- 4) Feed-in Tariff and/or an RPS Renewable Energy Portfolio Standard

Natural Gas Utilization:

- 1) Public Benefits for Natural Gas as an alternative transportation fuel
- 2) Natural Gas as a cost competitive fuel
- 3) Natural Gas conversions for aging coal fire generation plants

Education:

- 1) To be determined by our October 18th meeting.

Omitted line items initially considered by the Commission:

- 1) Identify Systemic Barriers to EE and RE deployment and investment
- 2) Loading order of Efficiency relating to alternative and existing energy sources
- 3) Balance Energy Efficiency with Reliability, universality and affordability.
- 4) Short and long term recovery mechanisms for participating entities.
- 5) Coordinating Energy Efficiency efforts with non-utility and energy efficiency programs.
- 6) On-bill financing as a tool for cost effective energy efficiency.

AAEC Studies:

July 14, 2011 -- 2011 Legislative Review by Representative Kathy Webb, (see appendices D).

- **Legislation referred to Joint Energy Committee:**

Act 347 - HB1452 – Pierce – To include propane within the definition of “Alternative Fuels” under the Arkansas Alternative Fuels Development Act.

Act 734 - SB875 – Files – To amend certain definitions used in the Arkansas Alternative Fuels Development Act.

Act 735 – SB875 – Files – To amend the Arkansas Clean Energy Development Act to include Natural Gas Public Utilities; to allow biofuel to satisfy the public utility’s energy efficiency of conservation goals.

Act 832 – HB1914 – Tyler – To provide incentives for converting the operation of motor vehicles to operate on compressed natural gas.

Act 1165 – HB1050 – Westerman – To promote energy efficiency and conservation.

Act 1232 – HB2219 – Collins – To provide state support for the electrical efficiency advancement for institutions of higher education.

ALSO – HCR1007 – G. Smith – For a study of lignite and the funding of lignite research.

HB2185 – G. Smith – To amend the Energy Conservation Endorsement Act of 1977 – Died in committee at Sine Die adjournment.

- **Legislation referred to Insurance and Commerce Committee:**

SB516 – D. Johnson – To grant authority for the establishment of energy improvement districts that will fund loans for energy efficiency improvements and clean renewable energy projects.

Do Pass, Sen. Insurance & Commerce, 3/28; Do Pass, House Insurance & Commerce, 3/30; Failed, House , 4/1; Returned to Senate, died at Sine Die adjournment.

- **SB721** – Madison – The Clean Energy Act of 2011 – To require an electric utility to purchase electricity produced by a renewable electric generation facility in this state.

J.D.Lowery, Program Manager with the Arkansas Energy Office stated that his office was charged with creating a strategic energy plan, and was working in concert with the Arkansas Economic Development Commission, as the plan is tied to economic development.

October 20, 2011 – Progress of State Energy Plan by Chris Benson,

(see appendices F).

Devise a strategic energy framework for advancing the Governor's energy policy goals.

The framework is not a comprehensive state energy plan for meeting the State's energy needs but rather a collection of strategies that will help to guide the State's decisions as it

transitions to a sustainable economy. The framework will be supported by a series of initiatives and actions that are realistic, measureable and actionable that the State can use to accomplish its objectives.

Strategic Energy Objectives

1. Meet future energy demand
 - a. Secure
 - b. Clean
2. Participate in clean energy market economy
 - a. Jobs
 - b. Investments
3. Introduce Sustainable Initiatives
 - a. Competitiveness
 - b. Environmental Preservation
 - c. National and State Security
 - d. Economic Growth
 - e. Reduced Costs
 - f. Innovation
 - g. Jobs
4. Where do we go from here?
 - c. Identify strategies that advance the Governor's energy priorities.
 - d. Identify stakeholders in the state who have a role to play in each of these strategies.
 - e. Identify barriers to implementing the strategies.
 - f. Identify initiatives that address the barriers.
 - g. Select initiatives that represent the best consensus solutions for reaching objectives.
 - h. Measure, verify and evaluate!!!
5. Strategies
 - a. Encourage the adoption of energy efficiency practices and technologies.

- b. Develop alternative transportation fuels and vehicles.
- c. Pursue sustainable policies that create jobs and investments.
- d. Encourage the development of clean electric generation.

6. Barriers

- a. High up front cost for energy efficiency and renewable energy systems.
- b. Transmission access is a potential limiting factor for EE/RE.
- c. Interconnection to the utility grid is a disincentive for renewable energy and cogeneration projects.
- d. Transaction costs are high for renewable and EE projects.
- e. Lack of skilled workforce to meet market demand requirements for EE and RE services.
- f. Difficulty measuring and evaluating EE, results in perception of high risk by financial community.
- g. The supply-demand chain that supports advanced biofuels and biopower development is not well developed.
- h. Alternative fuel vehicles lack infrastructure for refueling.
- i. Split incentives between participants, and lower their interest.
- j. Transfer of ownership before investment is recovered.
- k. Low consumer awareness/knowledge leads to poor purchase and operational decisions.
- l. Utility revenue structures provide little incentive to promote energy efficiency.
- m. Lower income consumers spend a disproportionate amount of their income on energy bills.

7. Strategic Challenges

- a. Arkansas lacks coordinated policies to promote alternative energy strategies;
- b. Arkansas has an energy or resource intensive economy;
- c. Arkansas imports a large share of its annual energy requirements;
- d. Arkansas has limited resources for public investment in energy programs;
- e. Many consumers and policy makers in Arkansas lack awareness of important

aspects of energy and its issues.

October 20, 2011 State Energy Code presented by Commissioner Lolley (see appendices H).

1. Building Codes, and including Energy Codes are consumer protection mechanisms.
2. Building codes originated out of the insurance sector to protect against loss of life and loss of real property. The finance sector should get behind energy codes since they allow home owners to better meet their mortgage obligations.
3. Home builders lobby and opponents argue that energy codes add to the cost of home ownership, and price certain people out of the market. Energy codes in fact save home owners money in operational costs spread-out over the entire length of home ownership.
4. Buildings account for about 70% of total electric consumption and 40% of all greenhouse gas emissions.
5. Advancing Arkansas' State Energy Code to meet or exceed 2009 IECC would allow Arkansas to join 32 other states with more stringent Energy Codes (see appendices for Residential State Energy Code Status as of April 1, 2011 from BCAP).

October 20, 2011 – Report Subcommittee – “Issues to Address”

In order to establish “Issues to Address,” Commissioner Allen comprised a list of topics. The commission agreed to combine similar issues, prioritizing a manageable list, and establish subcommittees to move forward with research. The issues as follow:

1. A renewable energy efficiency program
2. Renewable Energy Portfolio Standards
3. State Energy Plan
4. Compressed Natural Gas for motor vehicles
5. Arkansas Energy Code

6. Gaps and persistent barriers in energy programs in Arkansas
7. General Disclosure Policy
8. Public benefit funds for energy efficiency
9. Sales Tax Incentives for energy efficiency
10. Sales Tax Incentives for renewable energy
11. Property tax incentives for renewable energy
12. Property Assessed Clean Energy (PACE)
13. Loading order of efficiency relating to alternative and existing energy sources
14. Balance energy efficiency with reliability, universality and affordability
15. Economic disincentives currently faced by utility's for promoting energy efficiency
16. Short and long term recovery mechanism for participating entities
17. Coordinating energy efficiency efforts with non-utility energy efficiency entities
18. Existing residential building codes for both rural and urban areas
19. Manufacturer incentives to encourage adoption of energy efficiency measures
20. Consumer based incentives
21. On-bill financing as a tool for cost-effective energy efficiency
22. State interconnection policy standards
23. Renewable energy access policies
24. Feed-in Tariff (REFIT)

October 26, 2011 -- Arkansas Energy Fact Sheet forwarded at the request of Commissioner Mooreland, (see appendices G).

December 15, 2011 – Handout C – Topics offered for consideration by the AAEC 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. Issues falling under this heading include items 1,3,5,6,8,10,14,15,16,17,18,19,20 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.

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

- **January 13, 2012** – State Energy Plan Stakeholder Meeting with Governor Mike Beebe (see appendices I).

February 02, 2012 – Report on State Energy Plan – Chairman Hauser and Commissioner Lolley (see appendices J).

February 02, 2012 – Present UofA at Little Rock’s Institute for Economic Advancement
DRAFT Questionnaire “State Energy Plan Survey” to the AAEC (see appendices K).

February 02, 2012 – Bioenergy Opportunities in Arkansas presented by Jim Wimberly,

President, BioEnergy Systems, LLC (see appendices L).

An Overview of Bioenergy Options & Opportunities in Arkansas

- **Overview**
 - **Biorefineries**
 - Drivers & opportunities
 - Arkansas' strengths
 - **Biopower**
 - Stand-alone facilities
 - Co-firing facilities
 - CHP facilities
 - **Other biomass-derived products**
 - Biobased [non-energy] products
 - Biomass pellets
 - Litter-to-heat-and-char
 - **In summary: Bioenergy is good for Arkansas**
 - Environmental benefits
 - Economic benefits
 - i. To Arkansas' businesses
 - ii. To the State
 - **Recommended actions items**
- I. Presentation overview*
- Overview of biomass energy
 - Bioenergy basics
 - Potential benefits to Arkansas
 - Key terminology
 - Potential bioenergy enterprises of particular interest to Arkansas
 - Biorefineries
 - Biopower

- Co-firing
- CHP

II. Combined-Heat-and-Char Bioenergy basics

- Bioenergy is a form of solar energy
- Atmospheric carbon converted to plant mass via photosynthesis
- Plants are essentially solar batteries
- A variety of biomass-derived products
- Liquid transportation fuels
- Electricity
- Thermal energy
 - Space heating
 - Steam (process heat)
- Intermediate energy products
 - Pellets
- High-value non-energy co-products
 - E.g., biobased polymers for plastics manufacturing

III. Bioenergy can be good for Arkansas

- Significant investment opportunities
- Example: 5 commercial-scale enterprises... ~\$2 billion capital cost
- Significant potential energy contributions
- 100's of millions of gallons of biofuels per year
- 100's of megawatts of power
- Significant economic benefits to the State
- 1000's of jobs
 - Feedstock production, harvesting, & transport
 - Operations of biorefineries and biopower facilities
- Home-grown fuel
 - Reduced import of coal & refined liquid fuels from other states

- Economic benefits to existing industries
 - Forest products
 - Agriculture

IV. But, bioenergy is not easy...

- Numerous logistical challenges
- Biomass feedstock supply chains are complicated
- The economics are, generally, not attractive...
- Biofuels cannot currently compete with petro-derived fuels
 - Without support programs such as the RFS2
- Biopower cannot currently compete with power from coal or NG
- But, current conditions are expected to change
 - And we should move forward now with these energy options
- Public policies are critical
 - and several federal support programs already exist
- In order to pursue commercial-scale deployment...
- *We need to understand the details of bioenergy options and opportunities in order to make informed decisions about public policies that stimulate (or constrain) commercial deployment*

V. Bioenergy terminology

- Feedstocks
- Plant- or animal-derived material
 - converted in value-added products
- Examples
 - Woody biomass
- In-forest residues (IFR)
 - Ag field residues
 - Dedicated energy crops
 - Chicken litter

- Biomass feedstock supply chain
 - All of the activities associated with delivery of biomass
- Crop establishment
- Production & harvesting
- Storage & transportation
- Pre-processin
- Biofuels
- Liquid transportation fuels made from biomass
- Examples:
 - Drop-in fuels
 - Cellulosic ethanol
 - Renewable diesel
- This is different from oil-derived biodiesel
 - First generation biofuels
- Corn-derived ethanol
- Soy-derived biodiesel
- Produced at a biorefinery
- Facility size typically measured in millions of gallons per year (MGY)
 - Average cellulosic biorefinery size = 40 MGY g
- Biopower
- Electricity from biomass
 - Biopower facilities are more suitable for base-load (like coal)
- Types of biopower facilities
 - Stand-alone powerplant
- A dedicated biomass-to-electricity generating facility
 - Co-firing
- Biomass fuel is used to displace a fraction of coal
 - CHP

- “Combined heat and power”
- Co-generation (“co-gen”)
 - Thermal energy + electricity
 - Most large forest products manufacturing facilities in Arkansas already have a CHP system.
- Biopower basics
- 1 Megawatt (MW) = 1,000,000 watts
- 1 Megawatt-hour (MWh) = 1 megawatt for 1 hour
- Capacity Factor (CF) = % of the year a facility generates full power
- Conversion technologies
- Platforms (pathways)
 - Biochemical
- Fermentation
- Anaerobic digestion
 - Thermochemical
- Combustion
- Gasification
- Pyrolysis

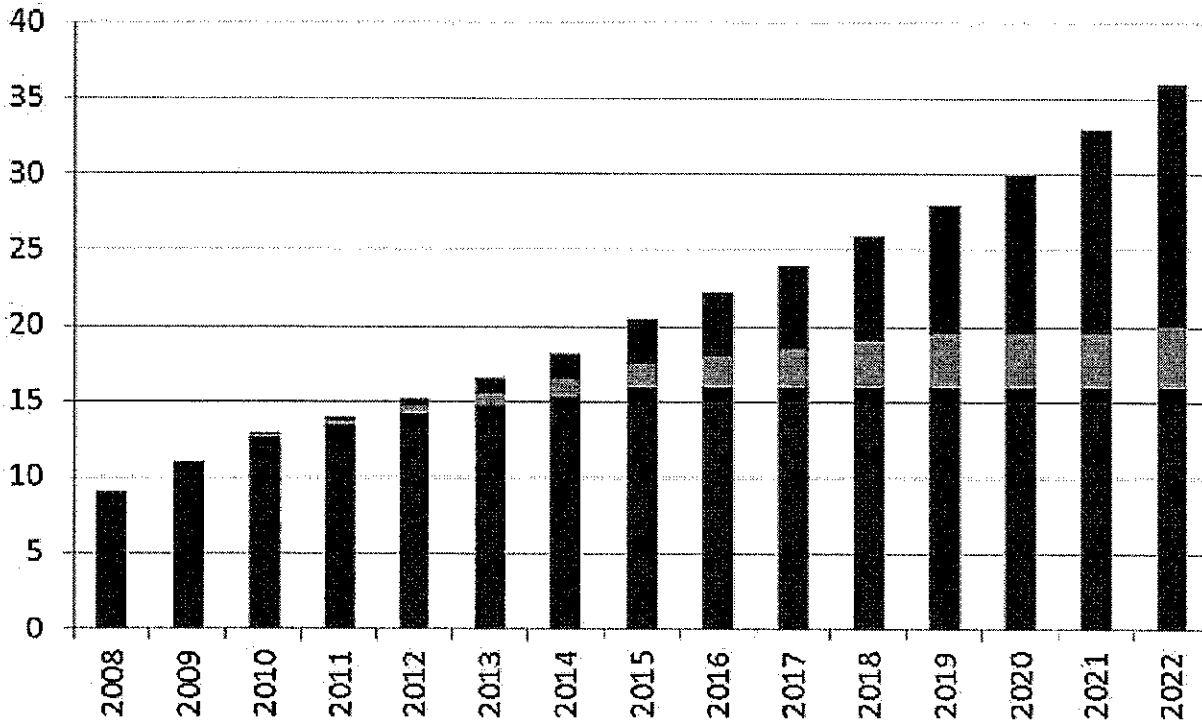
VI. Areas of specific interest for Arkansas

- Biorefineries
- Biopower
- Co-firing
- CHP
- Integrated facilities
- Biorefinery
- Biopower
- Thermal energy
- High-value bio-based non-energy products

- Combined-Heat-and-Char
- For broiler and turkey farms

VII. Biorefineries

- The primary driving factor: RFS2



VIII. Biorefineries

- 21 BGY ... that's at least 200 new biorefineries
- That's an average of 4 per state
- But, given Arkansas' resource base, we should be above average
 - So, how many should we plan for?
- One biorefinery...
- Imagine a hybrid paper mill and small oil refinery
- Biomass feedstocks needed
 - ~500,000 dry tons / year
 - On average, ~2/3rds will come from dedicated energy crops
- The balance from woody/ag residues

- Capital cost: ~\$270,000,000
- Revenues from product sales: ~\$120,000,000 per year
- Jobs created: ~960 (direct) for 30 years

IX. Biorefineries...how might we pursue for AR?

- We're competing with every neighboring state
- Biorefineries have been initiated in MO, TN, MS, LA, TX, OK, & KS
- Project developers seek to reduce project risks
- They need to reduce uncertainties re feedstock supply chains
 - AR needs an updated biomass resource assessment
 - The research community needs help addressing key issues
- They cannot move forward with project financing
 - How can we help them secure project financing?
- They need to know who to contact within the State
 - More coordination between state agencies and private sector
- A new report from Winrock will shed more light on the economics of a hypothetical biorefinery in northeast AR
- Due out by early March

X. Biopower

- Types of biopower facilities
- Stand-alone powerplant
 - A dedicated biomass-to-electricity generating facility
- Co-firing
 - Biomass fuel is used to displace a fraction of coal
 - Maintain same capacity and power generation
- CHP
 - “Combined heat and power”
 - Co-generation (“co-gen”)
- Thermal energy + electricity

XI. Co-firing

- There are currently 4 coal-fired powerplants in Arkansas...
- Total installed capacity = 4,600 MW
- Typical capacity factor (CF) = 83%
- $4,600 \text{ MW} \times 8760 \text{ hours/year} \times 83\% = 33,500,000 \text{ MWh/yr}$
- ~ 1,200 train loads of coal per year
- Let's look at a 2% biomass co-firing rate at all 4 facilities...
- Equates to ~100 MW of biopower
- Requiring ~750,000 tons/year of biomass
- Displace ~25 train-loads per year with home-grown fuel
- Value of home-grown fuel: ~\$35,000,000
- Job creation: ~200 (direct) for 30 years

XII. But we need details re co-firing options

- Co-firing capabilities are specific to each site
- The ability to co-fire will vary from one powerplant to another
- An assessment is needed for each of the 4 sites
- Evaluate the technical options
 - What co-firing levels could that particular boiler accommodate?
 - What are the on-site logistics & other technical considerations?
- Evaluate the potential feedstock supplies
 - What types of feedstocks would be available for that site?
 - How might a feedstock supply chain be established for that site?
- Evaluate the potential economics
 - Capital costs
 - Operating costs
 - Potential rate impacts (at various target co-firing levels)
- Determine potential job creation

XIII. Co-firing...how might we pursue for AR?

- Undertake assessments to determine co-firing options
- Coordinate between the key parties, e.g.:
- At the state level: AAEC, AEDC, APSC, ADEQ
- With the various utilities that own/operate the generating facilities
- Consider a pilot renewable power program
- RPS = Renewable Portfolio Standard
 - A state-level program requiring a fixed % of all electricity to be generated from renewables
 - 33 states already have some type of RPS in place and several others are considering an RPS or a pilot program approach
- Look at what has recently been done in LA and other nearby states

XIV. Combined-heat-and-char

- Use chicken litter as fuel
- Generate thermal energy to displace propane for space heating
- Also produce biochar, a valuable byproduct
- Farm-based renewable energy systems
- After 20 years of R&D, the technology is now available
- Multiple benefits
- Economic benefits to broiler producers
- Economic benefits from Arkansas-based manufacturing
- Water quality benefits (from avoided land application of litter)
- Displacement of fossil fuels with renewable biomass
- What's needed to move this forward?
- Support for a full-scale on-farm test & demonstration
- Support (to UA) for evaluations of using biochar
 - Essential for development of biochar markets

XV. In summary

- There are several commercial-scale bioenergy opportunities

- Biorefineries – particularly for drop-in fuels
- Biopower via co-firing
- Integrated biorefinery and CHP operation
- Combined-heat-and-char
- Actions needed
- Expanded efforts to attract bioenergy projects
 - Including a pilot RPS program
 - Including an updated statewide feedstock assessment
- Assessments of co-firing potential at AR’s 4 coal-fired powerplants
- Support for farm-scale litter-to-heat-and-char systems

February 02, 2012 – Compressed Natural Gas as a Motor Vehicle Fuel presented by Michael Gallup, Transportation Manager, SWN (see appendices M).

- **Economic Benefits**
 - Natural gas powered vehicles offer an economic return to fleets and individual users. Full cycle cost is lowered through reduced fuel price, fewer maintenance problems, and extended vehicle lives.
- **Clean Air**
 - Natural gas offers a clean alternative to traditional petroleum fuel powered vehicles. Natural gas vehicles (“NGVs”) offer an immediate reduction of 25% in GHG and smog causing emissions.
- **Local Resources**
 - Southwestern utilizes Fayetteville Shale gas at our Damascus, AR CNG station, to fuel CNG powered trucks – many of which were converted by suppliers based in Arkansas.
- **Energy Security**

- Natural gas is an abundant domestic fuel source, which reduces our nation's dependence upon import oil.

- **Transition SWN's fleet to CNG**
 - 160 conversions completed to date
 - Minimum of 185 conversions to be completed by end of 2012

- **Support the development of public fueling infrastructure**
 - Damascus CNG Station
 - City of North Little Rock & City of Little Rock

- **Incentivize employee adaptation of CNG**
 - The Big Give
 - SWN Employee CNG program

- **CNG advocacy & training**
 - Drive Natural Gas Initiative, Houston NGV Alliance, ANGA
 - Certification & training for fleet maintenance group

- **Summary**
 - SWN supports CNG
 - Shale gas opportunity
 - Infrastructure development
 - Vehicle economics
 - Abundant, Clean, & Domestic

April 19, 2012 – 2011 Arkansas Energy Code presented by Scott Hamilton, Director, Arkansas Energy Office (see appendices M).

I. Three Primary Components:

1. Commercial

- i. ASHRAE 90.1-2007 (Effective January 1, 2013)
- ii. Updated January 2011

2. Residential

IECC 2003-revising to 2009 IECC

3. Supplements and Amendments

II. Proposed Residential Energy Standard

- International Energy Conservation Code (IECC) 2009
- Some key differences from IECC 2003:
 - a. Mandatory duct pressure testing, maximum leakage rates
 - b. Requirement that 50% of lamps must be energy efficient
 - c. Consolidation of zones
 - d. Improvements to basic envelope requirements
 - e. Includes optional blower door, building pressure test
 - f. High Efficiency equipment/insulation tradeoffs

III. Energy Efficiency Financing

- Evaluating a potential Residential/Small Commercial Energy Efficient Upgrade Loan Program.
- Potential Funding Source Qualified Energy Conservation Bond (QECB): QECBs are one of the lowest cost public financing tools -Issued by the Department of Treasury.
- QECBs are designed to fund many types of energy conservation projects. AEO and ADFA are working together to explore programs and projects to utilize QECB funding.
- Currently there are not any reasonable financing options available to residents
- Offer low interest – extended terms-energy expense savings will offset finance payments
- Outcomes:
 - a. Lower energy demand from suppliers (utilities)
 - b. Highly favorable State sponsored program
 - c. Model for utilities and co-ops to adopt

- d. Improvement to Arkansans quality of life

April 19, 2012 – Un-Encumbered Wealth: Liberating Money to Stimulate the Economy and Create Jobs, Michele Halsell, Managing Director, Applied Sustainability Center, UofA Sam M. Walton College of Business (see appendices N).

I. Sustainability & Economic Prosperity

* ASC views sustainability as a pathway to enhanced economic prosperity while simultaneously safeguarding our environment and promoting the health and well-being of all Arkansans.

- We are taking a page from Walmart’s playbook.

II. It’s simple:

- Energy costs money.
- When you save energy, you save money.

III. Encumbered Wealth

- There is a significant amount of money in our economy that is encumbered for utility costs.
 - a. Business and Industry
 - b. City, County, and State Government
 - c. Schools, Churches, Non-profits
 - d. Homes

IV. How much money?

- Total Energy \$\$ Spent in 2008:
 - a. US \$363,649,643,000 (1/3 of a Trillion dollars)
 - b. Arkansas \$ 3,506,799,000
- Commercial & Industrial Energy \$ Spent 2008:
 - a. US \$208,216,609,000
 - b. Arkansas \$ 1,893,991,000

- Residential Energy \$\$ Spent in 2008:
 - a. US \$155,427,208,934
 - b. Arkansas \$ 1,612,820,386
 - c. Fayetteville \$ 26,782,507
- Source: Energy Information Administration, 2008.

V. Hypothesis:

- A reduction in energy consumption through conservation and energy efficiency measures would free up or liberate money in the economy that could be used for other purposes and would have a positive impact on local and state economies through:
 - a. saving jobs
 - b. increasing disposable income
 - c. increasing sales tax collections
 - d. reducing foreclosures
 - e. preventing loss of equity in residential real estate markets
 - f. creating new jobs

VI. Saving Jobs

- Reduce operating costs for businesses, schools, churches, and government offices.
- Savings can be significant.
- Example: U of A is saving 30% on its annual \$10 million budget for utilities.
- How many jobs does a \$3 million reduction in energy costs save?

VII. Reducing Foreclosures & Preserving Real Estate Equity

- Reduce costs of homeownership, making home ownership (and operation) more affordable.
- Example: Sonoma, California's energy improvement district (EID) allowed home owners to make energy efficiency improvements in their homes, reducing their utility bills.
- Result: Sonoma had a lower incidence of home foreclosures during the mortgage

crisis, preserving the equity of ALL homeowners.

VIII. Increase Disposable Income

- Reduced utility expenses equals an increase in disposable income.
- “Lower energy costs cause other forms of consumer spending (such as dining out or discretionary purchasing) to increase.”
- Example: N. Charleston, SC – energy efficiency for low income families has resulted in an average annual savings of \$1,500 on utility bills.
- These families have pent up demand and spent their \$1,500 at local stores and businesses, helping boost the local economy.
- Every \$1 saved on utilities has > \$1 impact on the local economy due to the multiplier effect.

IX. Sales Tax Collections

- When people reduce their utility bills, their disposable income increases.
- When people spend their added disposable income in their local economy, they help local businesses increase sales and stay healthy. Avoid layoffs.
- When businesses increase sales, the city and county collect additional sales tax.

X. What is the size of the opportunity?

- US Department of Energy estimates that energy efficiency could meet up to 50% of the future energy needs of this country.
- US has potential to reduce energy use by 23% by 2020. (Granade, HC, Creyts, J, Derkach, A, Farese, P, Nyquist, S, & Ostrowski, K, 2009, “Unlocking Energy Efficiency in the US Economy.”)
- What that tells me is that we are currently wasting a lot of energy. The opportunity is significant!

XI. Arkansas & EE

- 41st – Arkansas’ ranking in ACEEE 2010 scorecard for energy efficiency
- 11th – highest energy consumption per real dollar of GDP (US EIA and Neubauer

et al, 2010).

- Indicates significant energy use and potential for improvement in overall energy efficiency.
- ACEEE 2010 State Scorecard Ranking

XII. Residential Energy Consumption

- US average = 920 kWh/mo
- AR average = 1107 kWh/mo
- AR is 20% higher than the national avg.
- Room for improvement!

XIII. Energy Efficiency = First Fuel

- Alternative Energy Commission
- Energy Efficiency is the “first fuel”
- As such it is a resource that can be “mined” just like any other
- Mining this resource creates jobs
- Mining this resource saves money
- Mining EE insulates our economy & hedges against energy price increases

XIV. Arkansas

- Arkansas electricity expenses 2008:
 - a. \$3.5 billion Total; \$1.6 billion Residential
 - b. 10% reduction = \$350 million; \$160 million
 - c. 20% reduction = \$700 million; \$320 million
 - d. 30% reduction = \$1.05 billion; \$480 million

XV. Analogy:

- Our economy is leaking . . .
- We are leaking energy . . .
- We are leaking money . . .

- Energy in-efficiency and rising energy prices combine to erode budgets . . .
Businesses, homes, schools, city government.

XVI. *What if . . .*

- Jacksonville as a community had achieved a 20-30% reduction over the past 5 years?
- Fayetteville as a community had achieved a 20-30% reduction?
- What if we were as serious about energy efficiency as the Department of Defense?
- It may take 10 years or longer to achieve the full potential for EE, so what are we waiting for? For energy to get more expensive?

XVII. *Create New Green Jobs*

- To achieve a 10%, 20%, or 30% reduction usually requires some sort of investment. Someone has to do this work!
 - a. Duct sealing
 - b. Air infiltration sealing
 - c. Insulation – attic, walls, floor
 - d. High SEER AC
 - e. High AFUE Furnace
 - f. Windows

XVIII. *Energy Efficiency = Jobs!*

- Jobs that cannot be outsourced to Pakistan or China
- Jobs that pay good wages to people in your community
- Wages that will also be spent in your community

XIV. *Jobs for whom?*

- Graduates of our Centers of Excellence
- NWACommunity College
- Pulaski Tech

XIX. *Energy Efficiency: Engine of Economic Growth*

- \$16.8 billion invested in energy efficiency in 6 states in the north east would result

in:

- a. \$162 billion increase in economic activity over 15 years
- b. \$99 billion increase in Gross State Product
- c. \$73 billion returned to workers through increased real household income
- d. 51,000 new jobs over 15 years

XX. Encouraging the Green Economy

- a. National
- b. State
- c. Local

XXI. State Level

- Arkansas Public Service Commission established an Energy Efficiency Standard for Arkansas on 12/10/2010.
- Arkansas became the 27th state in the nation, the only southern state, to have an EES.
- IOU's must reduce kWh sold by a total of 1.5%:
 - .25% in 2011
 - .50% in 2012
 - .75% in 2013
- Utility Incentives
- PACE

XXII. Energy Efficiency Standards by State

- How does Arkansas' EES compare? Range is 1.5% to 26.1%

Arkansas 1.5% over 3 years

Pennsylvania 2.98% over 3 years

Iowa 6.3% over 5 years

Texas 4.08% over 12 years

Washington 11.74% over 12 years

Massachusetts 26.1% over 12 years

XXIII. Utility Incentive Programs Addresses financial barriers to EE retrofits.

Entergy (\$18 million 2011)

AEP Swepco (\$1.6 million 2011)

SourceGas (Arkansas Western Gas)

Centerpoint

Residential, commercial and farm

AC replacement, insulation, duct sealing, energy audits, etc.

XXIII. City Codes & Enforcement

- City Building Codes
- State adopted 2003 IECC building codes
- 2006, 2009, 2012 IECC standards
- Fayetteville is planning to adopt 2009
- Austin, TX – requires a home energy audit in order to sell a home (point of sale energy audit requirement).
- Cities can mandate EE for city-owned buildings

XXIV. Summary

- 20%-30% IS a stretch, but it is possible.
- It requires an investment (insulation, ducts, high SEER AC, LED lights).
- That investment creates LOCAL jobs.
- There are utility incentives to help offset the upfront costs.
- The savings result in increased disposable income that benefits the local economy.

April 19, 2012 – Property Assessed Clean Energy (PACE), Mark Roberston (see appendices O).

I. What is PACE?

PACE is a bipartisan local government initiative that allows property owners to finance energy efficiency and renewable energy projects for their homes and commercial

buildings. Interested property owners opt-in to receive financing for improvements that is repaid through an assessment on their property taxes for up to 20 years.

PACE financing spreads the cost of energy improvements such as weather sealing, insulation, energy efficient boilers and cooling systems, new windows, and solar installations over the expected life of the measures and allows for the repayment obligation to transfer automatically to the next property owner if the property is sold.

PACE is unique because it:

- Creates badly needed local jobs.

- Uses private capital, not taxes or government subsidies.

- Saves money for building owners and increases property values

- Is voluntary – not a government mandate.

- Promotes energy security without driving up energy costs.

- Avoids the need to build costly new power plants.

- Reduces air pollution.

Local government/community initiatives that creates permanent private sector jobs in America and makes our nation more energy secure by promoting energy efficiency and renewable energy projects in our homes and commercial buildings.

PACE is voluntary and community based, not mandated by Washington. It provides long term funding from private capital markets at low cost and needs no government subsidies or taxes.

PACE raises property values by making buildings less expensive to heat and cool and it enjoys broad bipartisan support nationwide at state and local levels.

PACE enabling legislation has been adopted by a total of 27 states.

II. Why PACE ?

PACE solves two key barriers to increased adoption of energy efficiency and small scale renewable energy:

1. High upfront costs.
2. Fear that project costs won't be recovered prior to a future sale of the property.

Basic energy efficiency measures can cut energy costs by up to 35%

Annual energy savings will typically exceed the cost of PACE assessments;

The upfront cost barrier actually turns into improved cash flow for owners.

Like OTHER property based assessments, PACE assessments stay with a property upon sale, until they are fully repaid by future owners who continue to benefit from the improvement measures.

PACE programs provide a way for local communities to sponsor programs that meet their individual needs.

III. Economic Benefits Of PACE

If 1% of U.S. homes participated in PACE, the projects would generate*:

226,000 jobs;

\$42 billion in economic output;

\$4.2 billion in combined Federal, state and local tax revenue.

* "Economic Impact Analysis of Property Assessed Clean Energy Programs (PACE). Study conducted by EcoNorthwest, May 2011.

Available at: www.pacenow.org

IV. Benefits of PACE

PACE promotes energy efficiency in ways that are good for America, our municipalities, building owners and mortgage lenders.

Benefits to Our Nation

- a. Creates permanent private sector jobs – nationwide and across a range of skills.
- b. Uses private capital for funding – NO taxes or government subsidies.
- c. Saves owners money – lower operating costs make their buildings more valuable.
- d. Promotes energy security – without federal regulation or taxes that drive up energy costs.
- e. Avoids costly power plants – increasingly difficult to site.
- f. No budgetary impact - voluntary participants pay all fees and expenses.

Benefits to Municipalities

- a. Permanent local jobs – as many as 10 per \$1 million in spending makes communities stronger.
- b. No debt or credit risk - bonds are secured solely by the assessment payments of op-in participants.
- c. Saves money for residents – PACE is the only assessment that creates positive cash flow.
- d. Voluntary participation – building owners who opt-in if they decide healthier.

V. Benefits to Property Owners

- a. No upfront cost - PACE financing spreads costs over the life of improvements.
- b. Owners save money - programs are designed to ensure annual savings exceed assessments.

- c. Assessment transfers upon sale - new owner benefits from improvements that stay with the property.
- d. Safety - assured by best practices and guidelines established to protect all program participants.
- e. Broad applicability – residential and commercial properties can use PACE.
- f. Voluntary – only opt-in participants pay assessments (and benefit from improvements).
- g. Comfort – efficient buildings are healthier and more comfortable.
- h. Benefits to Existing Lenders
- i. Lowers default risk – improved cash flow makes it easier for owners to pay mortgages.
- k. Improves Loan-to-Value Ratio - buildings that are less expensive to operate are worth more.
- l. Safety and soundness - best practices framework developed to meet all participants’ concerns.
- m. Lien risk minimized - non-acceleration of assessments in default limits senior lien PACE exposure to less than \$200 per home, on average.

VI. Strong Bipartisan Support Continues for HR 2599

VII. Protects Taxpayers and Banks

- a. Homes must have 15% or more positive equity to qualify.
- b. Projects are limited to 10% of the home value.
- c. Prohibits acceleration of non-delinquent payments.
- d. Projects must show a positive cash flow savings compared to the cost of the PACE investment; i.e., the estimated utility bill savings must exceed the assessment payments.
- e. Requires an energy audit or feasibility study prior to approval.
- f. Requires that the work must be performed by accredited professionals.

g. Requires that, prior to levying a PACE assessment, the local government determine that there are no signs of an inability to pay.

June 21, 2012 -- DynamicFuels -- Conversion of Fats, Oils & Greases Into Fuel, Andy Rojeski, Vice President of Renewable Energy, Tyson (see appendices P).

June 21, 2012 -- Energy Alternatives for Arkansas, Ben Thorp, Vice President and Board Chairman, Bioenergy Deployment Consortium (BDC), (see appendices Q).

October 24, 2012 -- Home Energy Performance, The Fifth Fuel, Matt Bell, Viridian (see appendices R).

I. Energy Efficiency

Energy efficiency represents a significant largely untapped opportunity for meeting the dual goals of financial returns and environmental protection. By eliminating wasted energy, the U.S. can reduce its fossil fuel use, move toward energy independence, and reduce its greenhouse gas (GHG) emissions by almost 40% by 2030.

Source: Rocky Mountain Institute

II. Arkansas Home Energy Cost

- 1,115,000 Households in Arkansas
- Average utility cost of \$1,900 per year
- 62% are below \$50,000 median household income spend 23% of their after tax income on energy

III. Arkansas Average Annual Utility Costs ~ \$1,900

- \$820 ~ Appliances and Light
- \$412 ~ Space Heating
- \$247 ~ Electric AC
- \$422 ~ Water Heating

IV. Value of Energy Efficiency

- Approximately \$2,000,000,000 spent annually on household utilities
- \$200 million dollars can be saved annually with just a 10% improvement

V. Barriers to Energy Efficiency Implementation

1. Uncertainty of Savings
2. Lack of Awareness and Knowledge
3. Access to Capital
4. Availability of Service Providers
5. Complicated Process

VI. Uncertainty of Savings

- Concepts of energy efficiency are complex and the science is confusing to consumers
- Who do you trust?
- No standardization of energy performance reporting

VII. Lack of Awareness

- You can't fix what you don't measure
- Most home owners aren't aware if they have a energy efficiency problem
- What uses energy in my home?

VII. Lack of Knowledge

- Customers don't understand the science of energy performance.

VIII. Capital

- Lenders don't recognize the value of energy efficiency savings
- Many energy efficiency measures don't result in an increase in property values
- Individuals with the most energy poverty have the least access to funding.
- Audit costs and improvement cost are often too costly
- Rebate incentives may not be available
- Low cost of energy in Arkansas leads to longer payback periods and less ROI

IX. Availability Of Service Providers

- Who do I call?
- Very few trained home energy auditors in the state of Arkansas

IX. Service Providers

- a. Traditional Providers
 - i. HVAC Contractors
 - ii. Insulation Contractors
 - iii. Window Installers
 - iv. Remodel Contractors
- b. New Service Providers
 - i. Certified Energy Auditors
 - ii. Home Performance Contractors
 - iii. Duct and Air Sealing Professionals

X. Traditional Process

1. Contact utility provider for rebate programs
2. Contact approved utility auditor
3. Schedule home energy audit
4. Review home energy audit recommendations
5. Contact approved utility contractors for bids
6. Obtain financing
7. Hire multiple contractors
8. Complete rebate documentation

XI. Problems with this Process

- Complicated and overwhelming to customers
- Limited to small list of utility approved contractors
- Many approved contractors are not cross trained in whole house energy performance (focused on HVAC, insulation, windows, etc.)
- Comprehensive low cost solutions are often overlooked

XI. Progress

- Some Arkansas utilities are providing incentives for home energy audits to increase education and awareness.
- New service providers are starting to offer comprehensive solutions to simplify the process.
- Utilities have adopted standardized building science protocols to measure performance (blower door, duct blaster, etc)
- Many of the utility incentives for energy efficiency measures are robust

XII. What We Need

- More public awareness on the financial impact of energy efficiency
- More utility rebate incentives for comprehensive home energy audits
- More trained home energy professionals
- Lenders to recognize the value of energy efficiency
- PACE legislation for the state of Arkansas